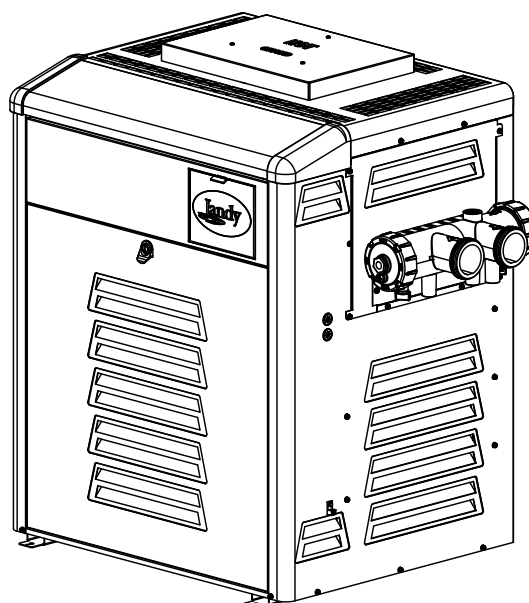


MODEL ZODIAC® LRZ ELECTRONIC NATURAL GAS AND LP

NOTE: LP Gas for Outdoor Use Only

**Instructions for Legacy Heaters
from Rev F to current**



Jandy Pro Series Legacy™ Pool and Spa Heater

! WARNING

If these instructions are not followed exactly, a fire or explosion may result, causing property damage, personal injury, or death.

FOR YOUR SAFETY: This product must be installed and serviced by a contractor who is licensed and qualified in pool equipment by the jurisdiction in which the product will be installed where such state or local requirements exists. In the event no such state or local requirement exists, the installer or maintainer must be a professional with sufficient experience in pool equipment installation and maintenance so that all of the instructions in this manual can be followed exactly. Before installing this product, read and follow all warning notices and instructions that accompany this product. Failure to follow warning notices and instructions may result in property damage, personal injury, or death. Improper installation and/or operation can create carbon monoxide gas and flue gases which can cause serious injury, property damage, or death. For indoor installations, as an additional measure of safety, Zodiac Pool Systems, Inc. strongly recommends installation of suitable Carbon Monoxide detectors in the vicinity of this appliance and in any adjacent occupied spaces. Improper installation and/or operation will void the warranty.

Do not store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance.

WHAT TO DO IF YOU SMELL GAS

- Do not try to light any appliance.
- Do not touch any electrical switch; do not use any phone in your building.
- Immediately call your gas supplier from a neighbor's phone. Follow the gas supplier's instructions.
- If you cannot reach your gas supplier, call the fire department.

Installation and service must be performed by a qualified installer, service agency or the gas supplier.

Table of Contents

Section 1. General Information	4	Section 6. Electrical.....	20
1.1 Introduction	4	6.1 General Information	20
1.2 Consumer Information and Safety	4	6.2 Main Power	20
1.2.1 Spa/Hot Tub Safety Rules.....	4	6.3 Bonding.....	21
1.2.2 Swimming Pool Energy Saving Tips	5	6.4 Optional Remote Controls	21
1.3 Warranty	5	6.4.1 Connection to a Remote Pool-Off-Spa Selector (3-Wire Connection).....	23
1.4 Codes and Standards	5	6.4.1.1 Install the Remote Pool-Off-Spa Selector	23
1.5 Technical Assistance.....	6	6.4.1.2 Configure the Control Panel	23
1.6 Materials Installer Must Provide.....	6	6.4.2 Connection to an AquaLink® RS, PDA, Remote TSTAT (2-Wire Connection) or Fireman's Switch.....	23
1.6.1 Materials for All Applications	6	6.4.2.1 Install the Remote TSTAT	23
1.6.2 Materials for Special Applications	6	6.4.2.2 Configure the Control Panel	23
1.7 Specifications.....	6	6.4.3 Connection to a Secondary User Interface	24
1.7.1 General Specifications.....	6		
1.7.2 Dimensions	7		
Section 2. Installation Instructions	8	Section 7. Operating Instructions	24
2.1 Introduction	8	7.1 Normal Operation	24
2.2 Field Assembly	8	7.2 Start-Up	24
2.3 Location Requirements	8	7.3 Operating the Controller	25
2.3.1 Introduction	8	7.3.1 Off Mode	26
2.3.2 Clearances.....	8	7.3.2 Pool Mode - (Normal Heat)	26
2.3.3 Flooring	9	7.3.3 Spa Mode - (Normal Heat).....	26
2.3.4 Outdoor Installation.....	10	7.4 User Setup Options	26
2.3.5 Indoor and Outdoor Shelter Installations	10	7.4.1 Language Setup.....	26
		7.4.2 Temperature Scale Setup	26
		7.4.3 Spa Timer Setup	26
		7.4.4 Display Light Setup	26
Section 3. Venting.....	11	7.5 Set Point Lockout.....	27
3.1 Combustion Air Supply	11	7.6 Lighting and Shutdown Procedures.....	27
3.2 Vent Pipe Sizing and General Installation	12	7.6.1 Lighting the Heater.....	27
3.2.1 Outdoor Installations	12	7.6.2 Shutdown	27
3.2.2 Indoor and Outdoor Shelter Installations ..	12	7.7 Adjusting the Water Pressure Switch.....	29
3.2.3 Inspection and Replacement of Existing Vent System with New Components	13	7.8 Temperature Rise	29
Section 4. Gas Connections	13		
4.1 Gas Supply and Piping	13	Section 8. Maintenance.....	30
4.2 Manifold Pressure.....	14	8.1 Water Chemistry	30
4.3 Special Precautions for LP Gas	15	8.2 Seasonal Care	31
		8.2.1 Spring and Fall Operation	31
Section 5. Water Connections.....	15	8.2.2 Winterizing	31
5.1 Water Piping	15	8.2.3 Spring Start-up.....	32
5.2 Check Valve Installation.....	16	8.3 Inspection and Service	32
5.3 Automatic Flow Control Valve	16	8.3.1 Owner Inspection	32
5.4 Reversible Water Connections	16	8.3.2 Professional Inspection.....	33
5.5 Connections at Heater	18		
5.6 Pressure Relief Valve and Temperature Relief Valve.....	18		
5.7 Auxiliary Components, Chlorinators, Ozone Generators, and Sanitizing Chemicals	20		

Table of Contents (Continued)

Section 9. Troubleshooting 33

- 9.1 General Heater Troubleshooting.....33
- 9.2 Service Codes33

Section 10. Professional Maintenance and Service 36

- 10.1 General Information36
- 10.2 Natural-Draft Combustion System36
- 10.3 Heater Components and Their Operation.....36
- 10.4 Electrical Troubleshooting.....37
 - 10.4.1 Electrical Power Supply37
 - 10.4.2 Controller38
 - 10.4.3 Control Circuit Troubleshooting.....38
 - 10.4.3.1 Transformer38
 - 10.4.3.2 Fuse.....38
 - 10.4.3.3 Water Pressure Switch38
 - 10.4.3.4 Roll-Out Switch (Fusible Link)38
 - 10.4.3.5 Temperature Limit Switches Circuit....38
 - 10.4.3.6 Gas Valve Voltage.....39
 - 10.4.3.7 Igniter/Ignition Control Circuit39

Section 11. Replacement Parts 42

- 11.1 Ordering Information.....42
- 11.2 Parts List.....43
- 11.3 General Exploded View44
- 11.4 Detailed Exploded View45

Section 1. General Information

1.1 Introduction

This manual provides installation and operation instructions for the Legacy Model LRZ electronic pool and spa heaters. Read these installation and operation instructions completely before proceeding with the installation. Consult the factory, or local factory representative, with any questions regarding this equipment.

Certain sections of this manual are specific to either United States or Canadian installations, and are labeled as such.

The Legacy Model LRZ electronic heater gets electrical power from an external 120VAC or 240VAC source and provides a dual electronic thermostat control system for pool/spa combinations or preheat convenience.

The Legacy Model LRZ electronic heater is specifically designed for heating fresh water swimming pools and spas, and with proper installation and care, they will provide years of reliable service. Do not use the heater to maintain pool or spa water temperature below 70°F (21°C). Do not use it as a heating boiler or general service water heater or to heat salt water. Consult your dealer for the appropriate Jandy products for these applications.

NOTE “Fresh water swimming pools and spas” include systems that utilize saltwater chlorine generator units, such as the Jandy AquaPure® Electronic Chlorine Generator. Please ensure that the salt content of the pool/spa *does not exceed* 4000 ppm and water flow rate is within 30-125 gpm (110-475 lpm).

1.2 Consumer Information and Safety

The Legacy Model LRZ electronic heater is designed and manufactured to provide many years of safe and reliable service when installed, operated and maintained according to the information in this manual and the installation codes referred to in later sections. Throughout the manual safety warnings and cautions are identified by the "⚠" symbol. Be sure to read and comply with all of the warnings and cautions.

1.2.1 Spa/Hot Tub Safety Rules

⚠ WARNING

The following “Safety Rules for Hot Tubs,” recommended by the U.S. Consumer Product Safety Commission, should be observed when using the spa.

⚠ AVERTISSEMENT

Les Règlements suivants pour Cuves Thermales, tel que recommandés par la Commission U.S. de Sécurité des Produits pour les Consommateurs, devraient être respectés lors de l'utilisation du spa.

⚠ WARNING

The U.S. Consumer Product Safety Commission warns that elevated water temperature can be hazardous. Consult heater operation and installation instructions for water temperature guidelines before setting temperature.

⚠ AVERTISSEMENT

La U.S. Consumer Product Safety Commission indique que des températures de l'eau élevées peuvent être dangereuses. Voir la notice d'installation et de fonctionnement pour le réglage de la température.

1. Spa or hot tub water temperature should never exceed 104°F (40°C). One hundred degrees Fahrenheit (100°F [38°C]) is considered safe for a healthy adult. Special caution is recommended for young children.
2. The drinking of alcoholic beverages before or during spa or hot tub use can cause drowsiness which could lead to unconsciousness, and subsequently result in drowning.
3. **Pregnant women take note!** Soaking in water above 102°F (38.5°C) can cause fetal damage during the first three months of pregnancy (which could result in the birth of a brain-damaged or deformed child). If pregnant women are going to use a spa or hot tub, they should make sure the water temperature is below 100°F (38°C) maximum.
4. The water temperature should always be checked with an accurate thermometer before entering a spa or hot tub. Temperature controls may vary by as much as 1°F (1.8°C°).
5. Persons with a medical history of heart disease, diabetes, circulatory or blood pressure problems should consult their physician before using a hot tub or spa.
6. Persons taking any medication which induces drowsiness (e.g., tranquilizers, antihistamines, or anticoagulants) should not use spas or hot tubs.
7. Prolonged immersion in hot water can induce hyperthermia.

Hyperthermia occurs when the internal body temperature reaches a level several degrees above the normal body temperature of 98.6°F (37°C). Symptoms include dizziness, fainting, drowsiness, lethargy, and an increase in the internal body temperature. The effects of hyperthermia include:

- Lack of awareness of impending hazard
- Failure to perceive heat
- Failure to recognize need to leave spa
- Physical inability to leave spa
- Fetal damage in pregnant women
- Unconsciousness resulting in a danger of drowning

1.2.2 Swimming Pool Energy Saving Tips

Zodiac Pool Systems, Inc., offers the following recommendations to help conserve fuel and minimize the cost of operating your pool heater without sacrificing comfort.

1. The American Red Cross® recommends a maximum water temperature of 78°F (25°C). Use an accurate pool thermometer. A difference of 4°F (2°C), between 78°F and 82°F (26°C and 28°C), will use as much as 40% more gas.
2. Carefully monitor the water temperature of your pool in the summertime. You can reduce heater usage due to warmer air temperatures.
3. Find the proper setting on the pool heater temperature control and use the Set Point Lockout feature to discourage further adjustments.
4. Set the pump time clock to start the pump no earlier than 6:00 AM during the pool heating season. This is the time when nightly heat loss balances.
5. If the pool is only going to be used on weekends, reduce the heater temperature control setting by 8 or 10 degrees during the week. Reset it to the 78°F (25°C) level a day or so before you plan to use the pool.
6. During the winter or when on vacation for longer than a week, shut down the heater by following the shutdown instructions found on the inside of the heater.
7. Where possible, shelter the pool from prevailing winds with well-trimmed hedges or other landscaping, cabanas, or fencing.
8. Always use a pool cover when practical. Besides providing a valuable safety feature, a pool cover will reduce heat loss, conserve chemicals, and reduce the load on filter systems.

1.3 Warranty

The Legacy Model LRZ electronic heater is sold with a limited factory warranty. Details are specified on the back cover of this manual.

Make all warranty claims to an authorized Jandy representative or directly to the Zodiac Pool Systems, Inc. factory. Claims must include the heater serial number and model (this information can be found on the rating plate), installation date, and name of the installer. Shipping costs are not included in the warranty coverage.

The warranty does NOT cover damage caused by improper assembly, installation, operation or field modification. Also, damage to the heat exchanger by corrosive water is NOT covered by the warranty. See Section 8.1 for maintaining proper pool water chemistry.

NOTE Keep this manual in a safe place for future reference when inspecting or servicing the heater.

1.4 Codes and Standards

The Legacy Model LRZ electronic pool and spa heaters are design certified by CSA (Canadian Standards Association) as complying with the latest edition of the "Standard for Gas Fired Pool Heaters", ANSI® Z21.56 in the USA and CAN-4.7 in Canada.

All Jandy heaters must be installed in accordance with the local building and installation codes as per the utility or authorities having jurisdiction.

In the absence of local codes, refer to the latest edition of the following national codes for installation:

1. In the United States, the "National Fuel Gas Code", NFPA® 54/ANSI Z223.1. Pay particular attention to the chapter addressing "Venting of Equipment".
2. In Canada, "The Natural Gas and Propane Installation Code", CAN/CSA-B149.1. **However, for minimum combustion air requirements, table 3 of this manual MUST be followed for proper and safe operation.** The Jandy LRZ electronic heater may not operate properly when installed with the only the minimum combustion air openings allowed in CAN/CSA-B149.1.

The Legacy Model LRZ electronic pool and spa heaters meets or exceeds the requirements of energy conservation regulations such as those in California, Hawaii, New York, Oregon and other states which require that a pool heater have intermittent ignition.

Any changes to the heater, gas controls, gas orifices, wiring, draft hood, vent cap, or improper installation may void the warranty. If change is required to any of the above, consult the factory.

1.5 Technical Assistance

Consult Zodiac Pool Systems, Inc. or your local Jandy distributor with any questions or problems involving the specifications, installation, and operation of your Jandy equipment. An experienced technical support staff is ready to assist you in assuring the proper performance and application of Jandy products. For technical support, call the Technical Support Department at (800) 822-7933.

1.6 Materials Installer Must Provide

1.6.1 Materials for All Applications

The following items are needed and are to be supplied by the installer for all Legacy Model LRZ electronic heater installations:

1. The correct size gas pipe to supply gas from the meter to the heater. See Section 4.1.
2. A manually operated gas valve to be installed in the gas line outside of the heater jacket.
3. A suitable gas union joint to connect the heater to the gas line outside of the heater.
4. Plumbing items needed to provide a sediment trap (drip leg) in the gas line between the manual gas valve and the heater. See Section 4.1.
5. A 120VAC or 240VAC power supply. A junction box is not needed at the heater; connections are made inside of the heater jacket.

1.6.2 Materials for Special Applications

In addition to the items listed above, the following items are needed for special applications:

1. A factory authorized draft hood and any vent pipe needed for indoor installations in the USA and outdoor shelter installations in Canada, see Section 3.2.2. Draft hoods are available from any Jandy distributor.
2. Primer and cement suitable for cementing CPVC pipe to PVC pipe and an appropriate coupling for connecting the factory supplied CPVC pipe nipples to PVC pool plumbing.
3. A noncombustible platform for installation on combustible surfaces, see Section 2.3.3. Noncombustible bases are available from your Jandy distributor.
4. A factory approved vent cap for all outdoor installations where wind conditions may cause downdrafting. Approved vent caps are available from your Jandy distributor. See Section 11.2, "Parts List", of this manual for the correct part number.

1.7 Specifications

1.7.1 General Specifications

1. Installation Location:
Certified for use:
In the USA:
Natural Gas: Indoor and Outdoor
LP: Outdoor Only
In Canada:
Natural Gas : Outdoor and Outdoor Shelter
LP Gas: Outdoor Only
2. Minimum Clearance From Combustible Material:
See Table 2 in Section 2.3.2
3. *Gas Pipe/Heater Gas Valve Connection:
Natural Gas: 3/4" NPT
LP: 3/4" NPT
*For diameter of gas line from meter to heater see Table 5 in Section 4.1.
4. Supply Gas Type:
Certified for use with:
Natural Gas and Liquefied Petroleum (LP Gas or Propane Gas).
5. Inlet Gas Supply Pressure:

	Minimum	Maximum
Natural Gas:	5.5 "WC	10.0 "WC
LP Gas:	10.0 "WC	14.0 "WC
6. Water Pipe/Heater Connection:
*2" Unthreaded PVC or CPVC
*Other size pipes may be used. See Section 5.5 for details
7. Water Flow Rate:
Maximum: 125 gpm (475 lpm)
Minimum: 30 gpm (110 lpm)
8. Working Water Pressure:
Maximum: 75 psi
9. Exhaust Vent Connection Size:
See Figure 1 in Section 1.7.2
10. Electrical Supply:
Either 120 Volts AC or 240 Volts AC.
11. Modification of Heater for High Altitude: The Jandy Legacy model LRZ electronic heater is normally shipped from the factory in the low altitude (sea level) operational configuration. When requested, the heaters can be configured and shipped for higher altitudes. For field conversions to change altitude configurations, manifold kits for mid altitudes and high altitudes are available from your Jandy pool products dealer or by contacting the Zodiac Technical Support Department at (800) 822-7933. See Section 11, "Parts List", of this manual for the correct kit number for the

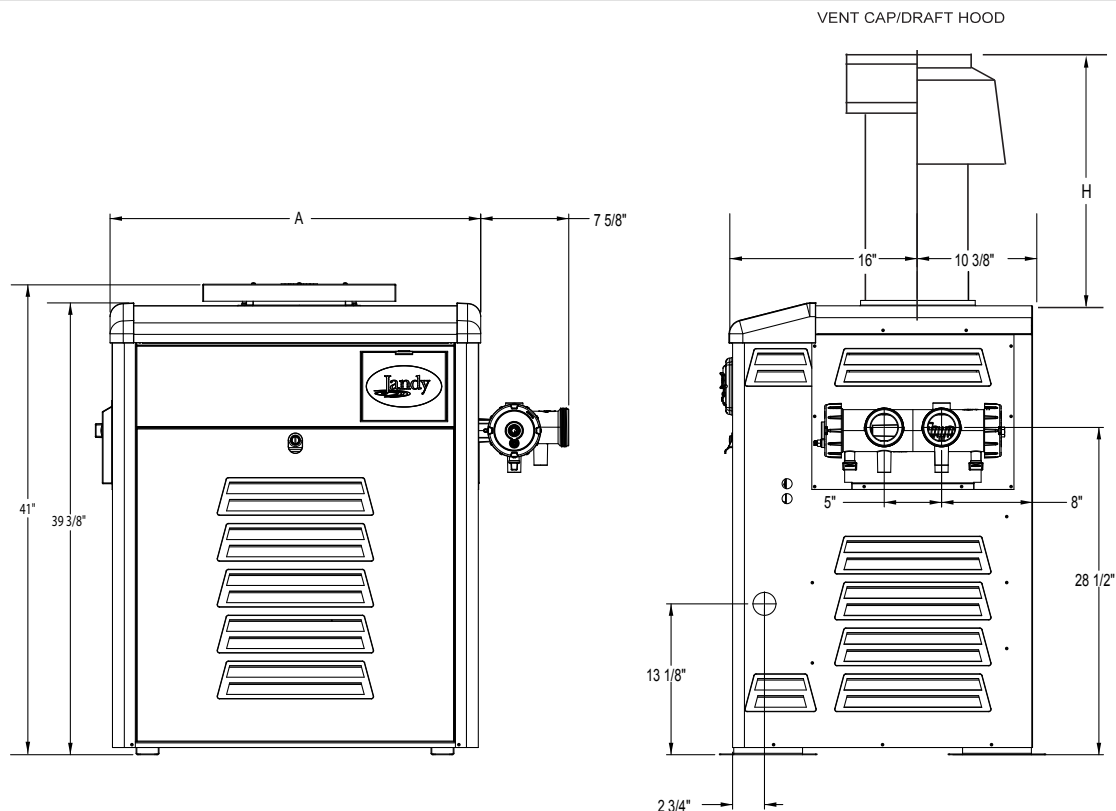
manifold assembly needed for your altitude. Table 1 defines the altitude designations as described by the "Standard for Gas Fired Pool Heaters", ANSI® Z21.56 in the United States and "Gas Fired Appliances For Use At High Altitudes", CAN 1-2.17 in Canada.

1.7.2 Dimensions

See Figure 1 for a diagram showing the heater's exterior dimensions and dimensions to critical connections on the heater.

Table 1. Altitude Designations For The Legacy Model LRZ Heater

NATURAL GAS		
ALTITUDE DESIGNATION	UNITED STATES	CANADA
LOW ALTITUDE	0-3000 FT	0-2000 FT (0-610 m)
MID ALTITUDE (H)	3001-6000 FT	2001-4500 FT (611-1370 m)
HIGH ALTITUDE (J)	6001-10,000 FT	NOT APPLICABLE
LP		
LOW ALTITUDE	0-5000 FT	0-4500 FT (0-1370 m)
HIGH ALTITUDE (H)	5001-10,000 FT	NOT APPLICABLE



Model	Heater Width Dim "A"		Venting Dimensions						Firing Rate	
			Vent Diameter		U.S. Outdoor Dimension "H"		U.S. Indoor or CAN Outdoor Shelter Dimension "H"			
	in.	cm	in.	cm	in.	cm	in.	cm	BTU/HR	kcal/HR
125	15½	38	6	15	18	46	24⅛	61	125,000	32
175	18½	40	6	15	18	46	24⅛	61	175,000	44
250	22¾	58	7	18	18¾	47	25¼	64	250,000	63
325	26⅞	68	8	20	18⅞	48	26½	67	325,000	82
400	32¾	82	9	23	21½	55	27½	70	399,000	101

Figure 1. General Configuration

Section 2. Installation Instructions

2.1 Introduction

WARNING

Improper installation or maintenance can cause nausea or asphyxiation from carbon monoxide in flue gases which could result in severe injury, or death. For indoor installations, as an additional measure of safety, Zodiac Pool Systems, Inc. strongly recommends installation of suitable Carbon Monoxide detectors in the vicinity of this appliance and in any adjacent occupied spaces.

AVERTISSEMENT

Une installation ou un entretien inadéquat peut causer la nausée ou l'asphyxie en raison du monoxyde de carbone présent dans les gaz de combustion et même entraîner des blessures graves ou la mort. Pour les installations intérieures, comme mesure de sécurité additionnelle, Zodiac Pool Systems, Inc. recommande fortement l'installation de détecteurs de monoxyde de carbone près de cet appareil ainsi que dans les espaces adjacents occupés.

Install the Legacy Model LRZ electronic heater, vent caps and draft hoods in accordance with the procedures in this manual, local codes and ordinances, and in accordance with the latest edition of the appropriate national code. See Section 1.4 "Codes and Standards".

All gas-fired products require correct installation to assure safe operation. The requirements for pool heaters include the following:

1. Field assembly (if required)
2. Appropriate site location (clearances) and flooring
3. Sufficient combustion and ventilation air
4. Properly sized gas meter and piping
5. Proper electrical wiring (if required)
6. Adequate water flow

This manual provides the information needed to meet these requirements. Review all application and installation procedures completely before continuing the installation.

2.2 Field Assembly

The Legacy Model LRZ electronic heater is shipped from the factory with the top assembly in the low-profile configuration for outdoor installation. The Legacy Model LRZ electronic heater is design certified for indoor installation when equipped with a draft hood, which must be installed without modification.

The Legacy Model LRZ electronic heater is also certified for installation in an outdoor shelter in Canada when equipped with a draft hood. An outdoor shelter

is an enclosure not normally occupied which does not communicate directly with occupied areas.

Check the rating plate on the heater or the Parts List (Section 11) of this manual for the correct Jandy draft hood or vent cap part number. See instructions supplied with the draft hood or vent cap for installation and attachment. When the draft hood is used, locate the heater so as to be in the same atmospheric pressure zone as the combustion air inlet to the heater.

2.3 Location Requirements

2.3.1 Introduction

CAUTION

When pool equipment is located below the pool surface, a leak from any component can cause large scale water loss or flooding. Zodiac Pool Systems, Inc., cannot be responsible for such water loss or flooding or resulting damage.

ATTENTION

Lorsque l'équipement d'une piscine est situé sous la surface de l'eau, une fuite provenant de n'importe quel élément peut causer une perte d'eau importante ou une inondation. Zodiac Pool Systems, Inc. n'est pas responsable des pertes d'eau, des inondations ou des avaries causées par une installation ou un entretien inadéquat.

The Legacy Model LRZ electronic heater may be installed indoors or outdoors as outlined in later sections. Location of the heater below *or above* the pool water level affects operation of its water pressure switch. See sections on water piping and heater start-up for more information about this.

Avoid placing the heater in locations where it can cause damage by water or condensate leakage. If this is not possible, provide a suitable drain pan to catch and divert any leakage. The pan must not restrict the air flow around the heater.

All criteria given in the following sections reflect minimum clearances as stated in the national standards. However, each installation must also be evaluated, taking into account the prevailing local conditions such as wind speed and direction, proximity and height of walls that may block ventilation, and proximity to public access areas.

2.3.2 Clearances

The heater must be placed to provide clearances on all sides for maintenance and inspection. There must also be minimum distances maintained from combustible surfaces, see Table 2.

At least 18" (457mm) access must be available in front of the heater for burner removal and access to the igniter.

Table 2. Minimum Heater Clearances From Combustible Surfaces
Table 2. Déagagements Minimaux à Assurer Entre les Parois de L'appareil et les Constructions Combustibles

SIDE OF HEATER	INDOOR (OUTDOOR SHELTER) INSTALLATION		OUTDOOR INSTALLTION	
	INCHES	CENTIMETERS	INCHES	CENTIMETERS
BLANK	8	20.3	8	20.3
REAR	6	15.2	6	15.2
PIPING	14	35.6	14	35.6
TOP	44	111.8	OPEN UNROOFED AREA	
FRONT	18*	45.7*	18*	45.7*

NOTE: Clearances listed in Table 2 are manufacturer's tested values. These are given as minimum values. Where local and national codes apply, and values are different than those listed in Table 2, use the greater value to ensure safe operation.

* In Canada - 24 in (61cm)

If the heater is to be installed in a garage, or similar structure, all burners and burner ignition devices must have a minimum 18" (457mm) clearance above the floor.

This heater must be installed at least 5 feet (1.52m) from the inside wall of a pool unless the heater is separated from the pool by a solid fence, wall or other permanent solid barrier.

Ce chauffe-piscine doit être installé au moins 5 pieds (1,52 m) de la paroi interne de la piscine à moins d'être isolé de la piscine par une clôture, un mur ou autre barrière permanente.

2.3.3 Flooring

The heater must be installed on a **level** surface of noncombustible construction or on fire-resistant slabs or arches. Noncombustible flooring is defined as flooring material and surface finish not capable of being ignited and burning and with no combustible materials against the underside. Acceptable materials are those consisting entirely of a combination of steel, iron, brick, tile, concrete, slate, glass or plaster. **Do not** install the heater directly on a combustible wood or carpet floor without placing a noncombustible platform between the floor and the heater.

The heater can be installed on a combustible floor if a noncombustible base assembly, available from Zodiac Pool Systems, Inc, is used. See the heater rating plate or the Parts List (Section 11) of this manual for the appropriate base part number. **Heaters must never be installed directly on carpeting.**

As an alternative to the Jandy noncombustible base plate, in the United States, the National Fuel Gas Code (NFPA® 54 / ANSI® Z223.1), and in Canada, the Natural Gas and Propane Installation Code (CAN/CSA-B149.1), allow a heater to be placed on a combustible surface when there is a platform under the heater made of hollow masonry no less than four (4) inches (102 millimeters [mm]) thick, covered with sheet metal at least 24 gauge thick and extending beyond the full width and depth of the heater by at least six (6) inches (153 mm) in all directions. The masonry must be laid with ends unsealed, and joints matched to provide free circulation of air from side to side through the masonry, see Figure 2. If the heater is installed in a carpeted alcove, the entire floor of the alcove must be covered by a noncombustible panel.

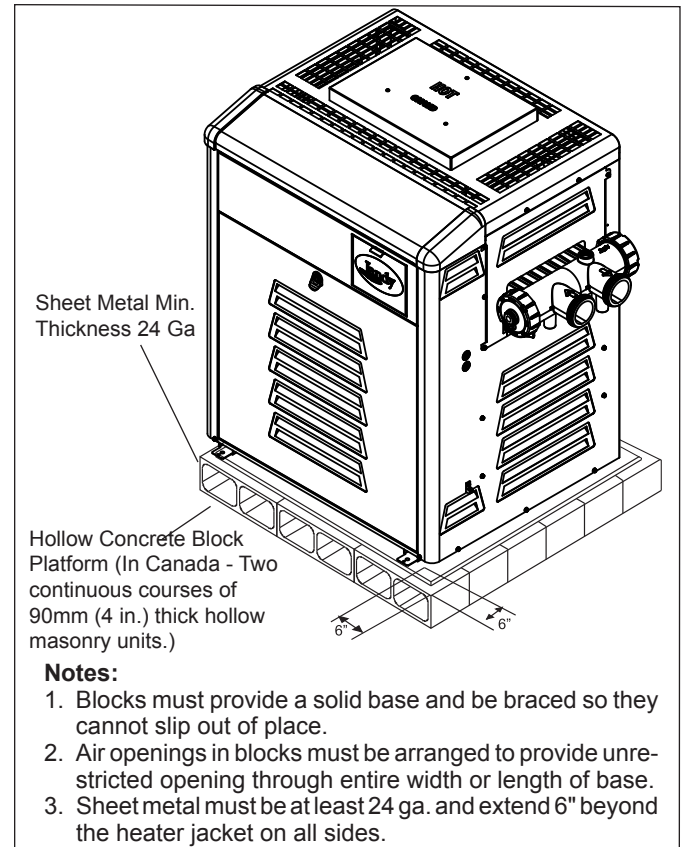


Figure 2. Noncombustible Platform

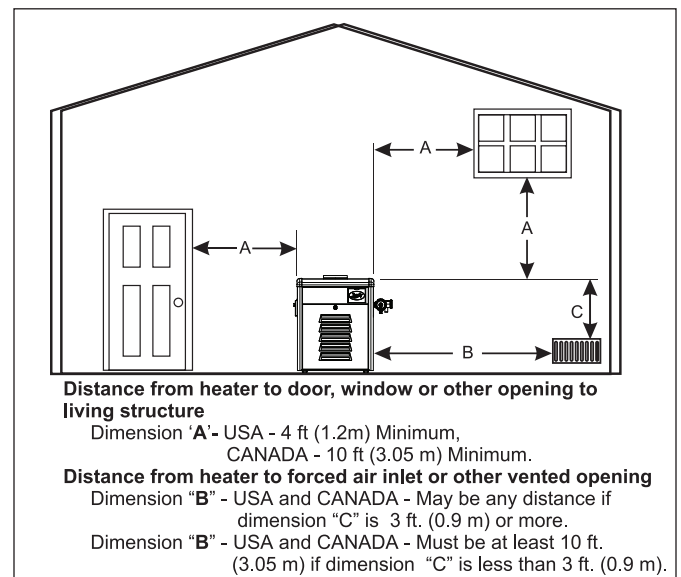


Figure 3. Outdoor Heater Installation

2.3.4 Outdoor Installation

The Legacy Model LRZ electronic heater can be installed in the low-profile configuration as received from the factory, or with an optional factory approved vent cap for high wind applications..

Locate the heater in an **open, unroofed area**. Do not install the heater under a deck. Do not locate the heater below or adjacent to any doors, glass openings, louvers, grills, etc., which connect in any way with an inhabited area of a building, even though the access might be through another structure (e.g., a garage or utility room).

In the United States the vent system shall terminate at least four (4) ft (1.2 m) below, four (4) ft (1.2 m) horizontally from, or one (1) ft (300 mm) above any door, operable window, or gravity inlet into any building. In Canada, the heater must be installed so that the exhaust point of the heater is at least 10.0 feet (3.0 m) from any building opening. See Figure 3.

⚠ WARNING

United States

Do not install the heater with the top of the vent assembly within 4 feet (1.22 m) horizontally, 4 feet (1.22 m) below or less than 1 ft (300 mm) above of any opening into a building.

Canada

Do not install the heater with the top of the vent assembly within 10 feet (3.05 m) of any opening into a building.

⚠ AVERTISSEMENT

Lorsque vous installez l'appareil de chauffage, assurez-vous que l'ouverture d'aération se trouve à un minimum de 10 pieds (3.05 m) de toute ouverture d'un bâtiment.

The top surface of the heater must be at least three (3) feet above any forced air inlet, or intake ducts located within 10 feet horizontally.

If the heater is installed under an overhang, there must be a minimum clearance of five (5) feet (1.5 m) above the top of the heater and the structure should not overhang the heater more than 12 inches (0.30 m). The area under the overhang must be open on three sides. This prevents combustion gases from being diverted into living areas through doors, windows, or gravity inlets.

Ne pas installer ce chauffe-piscine sous une saillie mesurant moins de 3 pi de hauteur. La partie sous la saillie doit être ouverte sur 3 côtés.

If the heater is installed close to a structure, protect it from rain water runoff with rain gutters on the roof or

other measures. Do not locate the heater near irrigation sprinkler systems that could spray water on it. Water from sprinklers may cause damage to controls and electronic components.

Avoid locations where wind deflection off nearby structures might cause downdraft conditions. Where downdraft conditions exist, locate the heater at least three (3) feet (0.91 m) from vertical surfaces (e.g., nearby buildings and walls).

In Florida, it is required that the heater be securely fastened to the equipment pad. Use size 1/4" x 2-1/4" long galvanized or plated concrete screws and washers at each of the four tabs located at the base of the heater. Mounting the appliance in this manner meets the applicable requirements of the Florida Building Code.

Mounting screws are not provided with this heater. After placing the heater on the equipment pad, drill a hole in the concrete at each of the four tabs on the feet of the heater. (The correct size drill bit is usually provided with the concrete screws when purchased). Place a screw in each of the holes and fasten the heater to the equipment pad. See Figure 4. **Do not over-torque the screws.**

2.3.5 Indoor and Outdoor Shelter Installations

An outdoor shelter (Canada only) is an unoccupied enclosure which does not communicate directly with occupied areas. All indoor installations and outdoor shelter installations require a factory approved draft hood. The draft hood must be installed without modification and in accordance with the instructions provided by the manufacturer.

Une remise extérieure (au Canada seulement) est un endroit inoccupé qui ne communique pas directement avec les endroits occupés. Toutes les installations intérieures et remises extérieures exigent l'addition d'une cheminée approuvée par le manufacturier. La cheminée doit être installée sans aucune modification et selon les exigences fournies par le manufacturier.

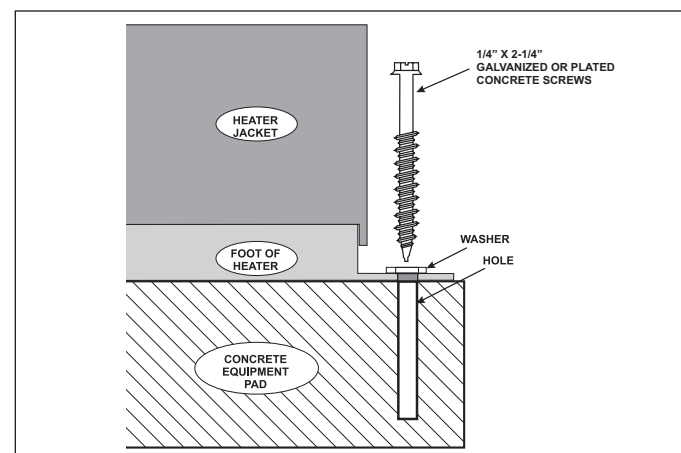


Figure 4. Anchor Heater To Equipment Pad

These codes, standards and Zodiac Pool Systems, Inc., require that the heater be properly vented as outlined in this manual. Proper ventilation of exhaust and combustion air are essential for the safe and efficient operation of the heater. See Section 3.

Section 3. Venting

3.1 Combustion Air Supply

The heater location must provide sufficient air supply for proper combustion and ventilation of the surrounding area as outlined in the latest edition of ANSI® standard Z223.1 (NFPA® 54). The minimum allowable combustion air opening in the Canadian Natural Gas and Propane Installation Code (CAN/CSA B149.1) are not sufficient for safe and proper operation of the Legacy Model LRZ electronic heaters. Combustion air openings must be followed per the requirements of ANSI Z223.1 (NFPA 54) and Table 3.

In general, these requirements specify that the room in which a heater is installed should be provided with two permanent air supply openings; one within 12 inches (305 mm) of the ceiling, the other within 12 inches (305 mm) of the floor.

All indoor installations must have openings to outside air for combustion, ventilation, and dilution of flue gases from inside the building, see Figure 5 and Table 3. Zodiac Pool Systems, Inc., does not recommend indoor installations that do not provide combustion air from outside the building.

All outdoor shelter installations (Canada only) must have uninterrupted openings to outside air for combustion and ventilation. The installation must be in accordance with the latest edition of CAN/CSA B149.1. **For combustion air supply openings, however, the requirements of Table 3 MUST be followed for safe and proper operation.** The minimum combustion air openings allowed in CAN/CSA B149.1 are NOT sufficient for the model LRZ electronic heaters.

Table 3. Air Openings to Outside

Model	Required Net Free Open Area* for Combustion Air Openings			
	Direct from outside		Duct from outside	
	in ²	(cm ²)	in ²	(cm ²)
125	32	(206)	64	(413)
175	44	(284)	88	(568)
250	63	(406)	126	(813)
325	82	(429)	164	(1058)
400	100	(645)	200	(1290)

*Area indicated is for one of two openings; one at floor level and one at the ceiling, so the total net free area would be double the figures indicated. For special conditions, refer to NFPA54 ANSI Z223.1.

The requirements in this table for combustion air openings MUST be followed for all Canadian installations also. The minimum allowable combustion air openings in the Canadian National Standards CAN/CSA B149.1 are not adequate for proper operation of the LRZ electronic heaters.

NOTE: If using screens and/or metal louvers, compensate by adding 50% additional area to each opening. If using wood louvers each opening must be at least four times the area indicated in the table above.

Zodiac Pool Systems, Inc., does not recommend outdoor shelter installations that depend on internal air for combustion. Combustion air should be ducted to the heater from outside the structure.

Outside Air Supply: When combustion air is supplied directly through an outside wall, each opening should have a minimum free area of one square inch per 4,000 BTU/h (1.2kW) input of the total input rating of all appliances in the enclosed area. If air is provided through horizontal ducts, each opening and duct must provide one square inch of flow area for each 2000 BTU/h (0.6 kW). These requirements are summarized in Table 3. Note that the areas specified are net free areas and should be increased when the openings are covered by screens, louvers, grills or other protective covers. See Figure 5 and Table 3 notes.

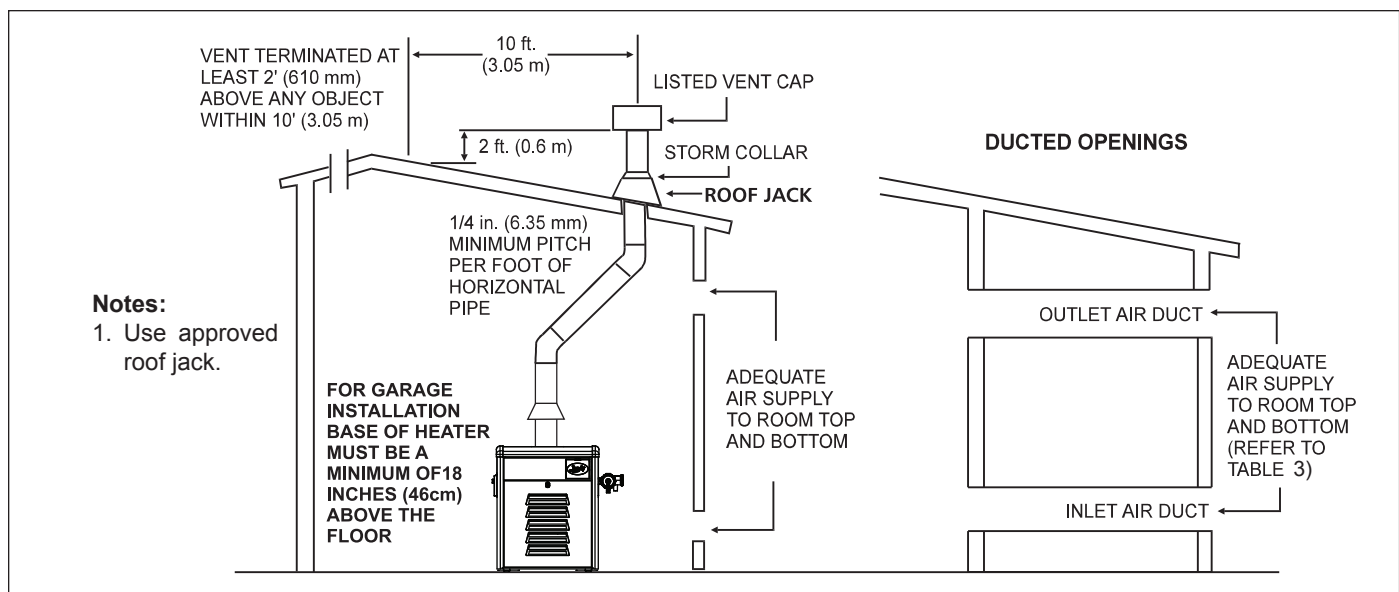


Figure 5. Indoor Installation Venting (USA), or Outdoor Shelter (Canada)

NOTE Except for the combustion air openings requirements, in Canada, follow Canadian Standard, CAN/CSA-B149.1 or local codes. Follow the requirements of Table 3 for the minimum combustion air openings required.

Exhaust Fans or Vents: Any equipment which exhausts air from the room where the heater is installed can deplete the combustion air supply or reverse the natural draft action of the venting system. This could cause flue products to accumulate in the room. Additional air must be supplied to compensate for such exhaust.

The information in Table 3 is not applicable in installations where exhaust fans or blowers of any type are used. Such installations must be designed by qualified engineers.

The heater must be completely isolated and protected from any source of corrosive chemical fumes such as those emitted by trichlorethylene, perchloroethylene, chlorine, etc.

WARNING

Do not store any chemicals, cleaners, or other corrosive material near combustion air openings or in the room. Avoid locating appliance vents in the vicinity of combustion air openings. Failure to prevent corrosive materials from mixing with combustion air can result in reduced heater life and unsafe heater operation.

AVERTISSEMENT

Ne pas entreposer ni utiliser d'essence ni d'autres vapeurs ou liquides inflammables à proximité de cet appareil ou de tout autre appareil.

3.2 Vent Pipe Sizing and General Installation

3.2.1 Outdoor Installations

For outdoor installations, exhaust venting considerations will determine the placement of the heater, see Section 2.3.4. If the heater cannot be placed so as to meet the requirements stated in Section 2.3.4, a vent pipe and cap may be added to the heater to move the exhaust vent opening to a position that complies with the requirements.

When the heater is installed in areas of high wind or when unavoidably installed near a vertical obstruction where downdrafting may occur, it may be desirable to add a vent cap directly to the top of the heater.

In all cases, vent pipes and caps must be of the same diameter as the exhaust outlet of the heater. Approved vent caps may be obtained through your Zodiac distributor.

3.2.2 Indoor and Outdoor Shelter Installations

WARNING

Vent pipe diameter must be as required by the National fuel Gas Code Z223.1 or the Canadian Installation Codes for Gas Appliances CAN/CSA-B149.1. Undersized pipe can result in inadequate venting and oversize pipe can result in vent condensation. In either case the result can be release of combustion products to the indoors. This can cause serious injury or death by carbon monoxide poisoning or asphyxiation.

AVERTISSEMENT

Le diamètre des tuyaux de ventilation doit répondre aux exigences du *National Fuel Gas Code* Z223.1 ou du code canadien des installations des appareils à gaz CAN/CSA B149.1. Des tuyaux trop petits risquent d'entraîner une ventilation inadéquate et des tuyaux trop gros risquent de provoquer une condensation dans les tuyaux. Dans un cas comme dans l'autre, des produits de combustion risquent de s'échapper dans le bâtiment et causer des blessures graves ou l'asphyxie par le monoxyde de carbone.

All indoor installations and outdoor shelter installations require a factory approved draft hood. The draft hood must be installed without modification. All vent installations must be made in accordance with all local, state or provincial codes and with:

1. The National Fuel Gas Code, ANSI® Z223.1 (NFPA® 54), latest edition; pay particular attention to the chapter addressing "Venting of Equipment". Applicable provisions of additional applicable local building codes may also need to be followed.
2. In Canada, CAN/CSA B149.1.

Avoid long horizontal runs of the vent pipe, and 90° elbows, reductions and restrictions. Horizontal runs should have at least a 1/4 inch rise per foot (20mm per meter) in the direction of flow.

Avoid terminating heater vents near air conditioning or air supply fans. The fans can pick up exhaust flue products from the heater and return them inside the building, creating a possible health hazard.

Do not locate the vent terminal where flue products could strike against building materials and cause degradation.

Vent opening should be well away from trees or other obstructions that would prevent free air flow to and from vent terminal. Do not terminate the vent under decks, stairways, or car ports.

Be sure to support all venting so that connections will not separate and so that the weight of the vent pipe does not rest on the heater draft hood. All connections

should be made with rustproof sheet metal screws. Do not weld or fasten the vent pipe to the heater draft hood. The draft hood and heater top must be easily removable for normal heater service and inspection.

The draft hood outlet is to be connected to an unobstructed vent pipe of the same diameter, terminating outside the building. The vent must terminate at least two (2) feet (0.6 m) above the highest point of the roof or other object that is within ten (10) feet (3.0 m) of the vent termination. The vent pipe must have a listed vent cap which allows a full equivalent opening for flue products, see Figure 5. The top of the vent cap must be at least five feet in vertical height above the draft hood outlet.

Type “B” double wall or equivalent vent pipe is recommended for the entire venting system. However, single wall metal vent pipe may be used within the structure as specified in the latest edition of the National Fuel Gas Code ANSI® Z223.1 or in Canada CAN/CSA-B149.1

IMPORTANT NOTE: Do not use sheet metal screws at the snap lock joints of Type B gas vents.

When venting multiple appliances through one common duct, each appliance must have its own vent temperature limit switch. All vent limit switches must be wired in series so as to prevent any appliance from firing in the event of a blocked vent. Refer to ANSI Z223.1 or, in Canada, to CAN/CSA B149.1 for more information on multiple venting.

3.2.3 Inspection and Replacement of Existing Vent System with New Components

If the Legacy Model LRZ electronic is being installed to replace an existing pool heater, it is recommended that a new appropriate venting system be installed with the new heater.

However, if an existing venting system must be used, be sure to carefully inspect the venting system to ensure that it is in good condition and continues to be appropriate for the Legacy Model LRZ electronic heater. Replace any parts that are not in good and serviceable condition with new parts before completing the pool heater installation.

Section 4. Gas Connections

4.1 Gas Supply and Piping

Review the following general instructions before continuing the installation.

Important: Do not install LP gas units indoors.

WARNING

The Legacy Model LRZ pool and spa heaters are designed for use with either natural gas or LP gas. Check the rating plate on the inner panel to be sure that the heater is designed to use the type of gas being supplied. **DO NOT ATTEMPT TO CONVERT THIS HEATER FOR USE WITH ANY OTHER TYPE OF FUEL.**

AVERTISSEMENT

Les appareils de chauffage à faibles émissions Legacy Model LRZ pour piscines et cuves thermales sont conçus pour être utilisés avec du gaz naturel ou du gaz de pétrole liquéfié (GPL). Vérifiez l'information inscrite sur la plaque signalétique du panneau intérieur pour vous assurer que l'appareil est conçu pour le type de gaz fourni. **NE PAS ESSAYER DE CONVERTIR CET APPAREIL À UN AUTRE TYPE DE GAZ.**

1. Gas piping installation must be in accordance with the latest edition of ANSI Z223.1 and all local codes. In Canada, the installation must be in accordance with CAN/CSA B149.1 and all local codes that apply.
2. Check the gas supply to be sure that it is the same as the gas indicated on the heater's rating plate. Legacy Model LRZ electronic heaters, as shipped from the factory, are certified to operate within the altitude range indicated on the rating plate. If a field conversion to a different altitude range should be necessary, manifold kits are available for changing the altitude range of the heater. See Table 1 in section 1.7.1 of this manual to determine the correct altitude designation for your heater. Refer to Section 11 “Parts List” to order the correct part number of the manifold kit needed. When changing the altitude range of the heater, be sure to fill out the altitude conversion label, included in the kit. Apply the label next to the original rating plate.

CAUTION

Permanent damage to the gas valve will occur if the following procedures are not followed.

ATTENTION

Vous endommagerez la soupape de gaz si vous ne respectez pas les procédures suivantes.

- Use the figures in Table 4 to size the gas inlet piping from the gas meter to the heater. Check all local codes for compliance before installing the heater.

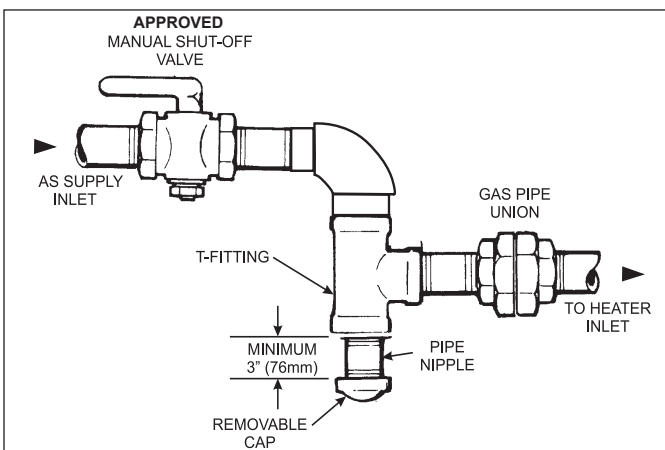
Table 4. Supply Gas Pipe Size Requirements*

Heater Size	Distance from Gas Meter					
	0-50 feet (0-15 m)		50-100 feet (15-30 m)		100-200 feet (30-60 m)	
	in.	mm	in.	mm	in.	mm
125	3/4	19	1	25	1	25
175	1	25	1	25	1-1/4	32
250	1	25	1-1/4	32	1-1/4	32
325	1-1/4	32	1-1/4	32	1-1/2	38
400	1-1/4	32	1-1/2	38	1-1/2	38

NOTES:

- *1. These numbers are for natural gas (0.65 Sp. Gr.) and are based on 1/2 inch (3.45 kPa) water column pressure drop. Check supply pressure with a manometer, and local code requirements for variations. **For LP gas, reduce pipe diameter by one size, but maintain a minimum 3/4" diameter.**
- Check supply pressure and local code requirements before proceeding with work.
- Pipe fittings must be considered when determining gas pipe sizing.
- This table shows the minimum supply gas pipe size required. Larger pipe size can be used if required by local code or if desired. It is critical that the incoming gas supply pressure at the heater is within the maximum and minimum pressure requirements of Table 5, Gas Supply Pressure Requirements. If the range of acceptable supply pressure is not provided, the gas supply system to the heater must be modified to meet the pressure requirement of Table 5.

- Install a sediment trap (drip leg) ahead of the gas controls, see Figure 6. Fit the trap with a threaded cap which can be removed for cleaning.

**Figure 6. Proper Design for a Sediment Trap/Drip Leg**

- Install a manual gas shutoff valve for service and safety. Do not use a restrictive gas cock. **DO NOT USE FLEXIBLE GAS PIPING**, it will restrict the gas flow to the heater.

- Disconnect the heater and its individual shutoff valve from the gas supply system during pressure testing of the system at pressures higher than 1/2 pounds per square inch (psi) (3.45 kilopascals [kPa]). If the test pressure is equal to or less than 1/2 psi (3.45 kPa), close the manual shutoff valve on the heater during the piping pressure test.
- If the gas supply pressure is less than required, check for undersized pipe between the meter and the heater, a restrictive fitting, or an undersized gas meter. Gas supply pressures to the heater are listed in Table 5.

Table 5. Gas Supply Pressure Requirements

Supply Pressure	Minimum	Maximum
Natural Gas	5.5 inches W.C. (1.4 kPa)	10.0 inches W.C. (2.5 kPa)
LP Gas	10.0 inches W.C. (2.5 kPa)	14.0 inches W.C. (3.5 kPa)
Manifold Pressure	Nominal	
Natural Gas	4.0 inches W.C. (1.0 kPa)	
LP Gas	9.0 inches W.C. (2.2 kPa)	

NOTE The maximum inlet gas pressure must not exceed the specified value. The minimum value listed is for the purpose of input adjustment. Refer to Table 5.

- Before operating the heater, test the complete gas supply system and all connections for leaks using a soap solution. Do not use an open flame.

⚠ CAUTION

Some leak test solutions (including soap and water) may cause corrosion or stress cracking. Rinse the piping with water after testing.

⚠ ATTENTION

Certaines solutions d'essai d'étanchéité (y compris l'eau et le savon) peuvent causer de la corrosion ou de la fissuration. Rincez les tuyaux à l'eau après l'essai d'étanchéité.

4.2 Manifold Pressure

Confirm that gas supply pressure is correct. If the gas supply pressure is less than required, check for undersized pipe between the meter and the heater, a restrictive fitting, or an undersized gas meter. Gas supply pressures to the heater, when it is operating, are listed in Table 5.

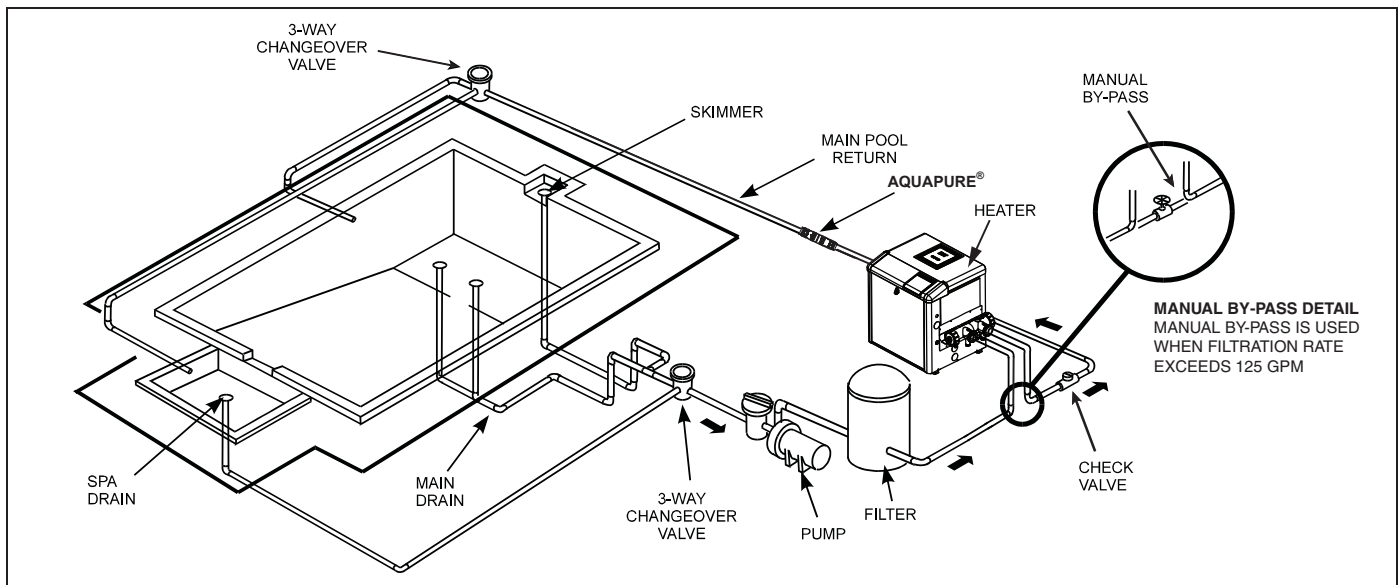


Figure 7. Typical Piping Installation

⚠ CAUTION

Manifold gas pressure for the Legacy Model LRZ natural gas heaters should be set at 4" WC. Propane heaters should be set to 9" WC.

⚠ ATTENTION

La pression du collecteur de pression pour les systèmes de chauffage au gaz naturel devrait être de 4" WC. Pour les systèmes de chauffage au gaz propane devrait être de 9" WC.

The manifold pressure may be checked by connecting a manometer to the pressure port on the outlet side of the valve. The pressure will be zero when the heater is not running. When the heater is operating the manifold gas pressure should be 4" WC for natural gas heaters and 9.0" WC for LP gas heaters.

If the manifold pressure indicated above is not correct, check the gas train for possible problems. Check the meter, gas line, gas fittings, and gas shut off for under sizing. Check the gas valve inlet for excess pipe dope, if all is correct, then it may be necessary to adjust the gas valve regulator. To adjust the manifold gas pressure, first remove the slotted cap next to the inlet pressure port on the inlet side of the gas valve. Under the slotted cap is a slotted plastic screw which increases the manifold pressure when turned clockwise and decreases the manifold pressure when turned counterclockwise. After measurements, and adjustments if necessary, have been made, make sure to replace the 1/8" NPT gas valve plugs on the inlet and manifold pressure ports, and the cap on the manifold pressure adjustment screw. It is extremely important to replace these parts before leaving the installation. Failure to do so can result in damage to property or injury or death. *With the heater firing,*

the pressure must be within the range shown in Table 5. Also check the pressure with the heater off.

4.3 Special Precautions for LP Gas

LP Gas is heavier than air and can therefore more readily collect or "pool" in enclosed areas if provision for proper ventilation is not made. Installation of pool heaters in enclosed areas such as pits is not recommended. Consult the National Fuel Gas Code (NFPA® 54 / ANSI® Z223.1, latest edition), the Liquefied Petroleum Gas Code (NFPA 58, latest edition), the Natural Gas and Propane Installation Code in Canada (CAN/CSA B149.1, latest edition), and any other local codes and fire protection authorities about specific installation restrictions in your area.

For ALL installations the combustion air openings requirements of Table 3 and NFPA54 / ANSI Z223.1 MUST be followed for safe and proper operation.

Section 5. Water Connections

5.1 Water Piping

Figure 7 illustrates typical piping for pool equipment in pool/spa combination pools.

For normal installations, do not install a shutoff valve or any kind of variable restriction in the water piping between the heater outlet and the pool/spa. In special installations where a shut-off valve, diverter valve or other variable restriction is required in the plumbing between the heater outlet and the pool, Zodiac Pool Systems, Inc. recommends the installation of a pressure relief valve on the heater. See Section 5.6.

Arrangement of pool system components other than as illustrated in these diagrams can affect the operation of the heater's water pressure switch. Location of the heater above or below the pool water surface can also affect operation of the switch. In general, the

pressure switch can be adjusted to accommodate this effect if the heater water connections are no more than six feet below the pool water surface and no more than 15 feet above it. See instructions for pressure switch adjustment (Section 7.7) in the heater start-up section of this manual for more information about this.

Note that when pool equipment is located below the pool surface a leak can result in large scale water loss or flooding. Zodiac Pool Systems, Inc. cannot be responsible for such water loss or flooding or the damage caused by either occurrence.

For special installations such as water connections below the water level of the pool, or for other questions contact the Zodiac Pool Systems, Inc. Technical Support Department at (800) 822-7933.

5.2 Check Valve Installation

⚠ WARNING

A check valve can interfere with the proper operation of certain Suction Vacuum Release System (SVRS) products. To avoid possible entrapment hazard, serious injury, or death, make sure to review the operation/owners manual of your particular SVRS product before installing the check valve.

The heater must be protected from back-siphoning of water, which can result in dry starts. If there is any chance of back-siphoning, provide a check valve between the pool and the filter pump inlet.

When an automatic chemical feeder is installed in the plumbing, it must be installed downstream of the heater, see Section 5.7. A check valve must be installed between the heater and the chemical feeder to prevent back-siphoning of chemically saturated water into the heater where it will damage the components.

5.3 Automatic Flow Control Valve

The inlet/outlet header of the Legacy Model LRZ electronic heater comes equipped with an automatic flow control valve. The automatic flow control valve maintains the proper flow through the heater at rates up to approximately 125 Gallons Per Minute (GPM) (475 liters per minute [LPM]). If the filter system flow rate is higher than approximately 125 GPM (475 LPM), install a manual bypass valve, see Figure 7, then perform a temperature rise test, see Section 7.8 and adjust the flow using the bypass valve until the proper temperature rise is obtained.

5.4 Reversible Water Connections

NOTE Reversing the header requires a longer syphon tube, order part number R0483601.

The Legacy Model LRZ electronic heater is shipped with water connections on the right side, but

can be modified in the field to provide left-side water connections. This procedure involves removing the heat exchanger headers and reinstalling them on opposite ends of the tube assembly. Some of the heater wiring must be disconnected and re-routed, so this procedure must be done only by a trained service technician.

Heat exchanger reversals are generally done before the installation of power and water to the heater. If you need to reverse the heat exchanger on a previously installed heater be sure that all electrical power, the gas supply and water supply have been turned off before starting the procedure. These instructions have been written to include the steps needed when reversing the water connections on an existing installation. If you are reversing the headers on a new installation, some steps will be ignored. Water connection reversal is illustrated in Figures 8 and 9.

Proceed as follows:

1. For an existing installation, drain the heater by removing the two drain plugs on the inlet/outlet header and the drain plug on the return header.
2. Remove the heater front panel (door).
3. Remove the I/O header side cover plates, top and bottom. See Figure 10.

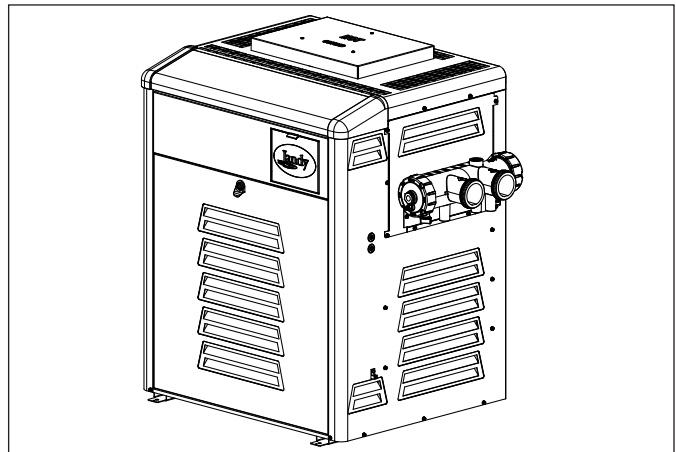


Figure 8. Water Connections as Shipped

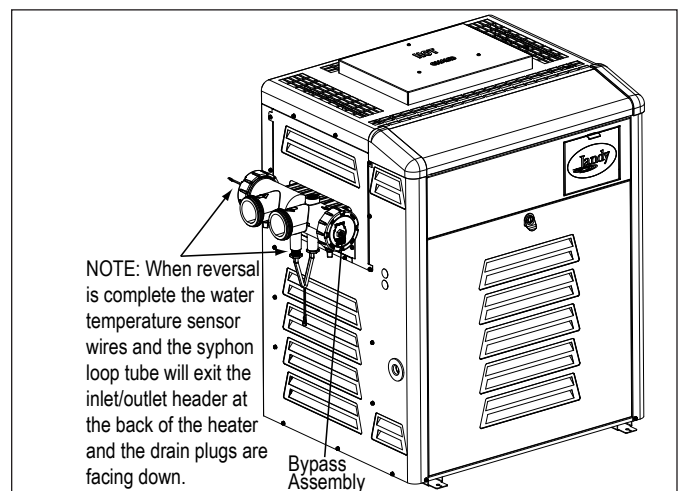


Figure 9. Water Connections Reversed

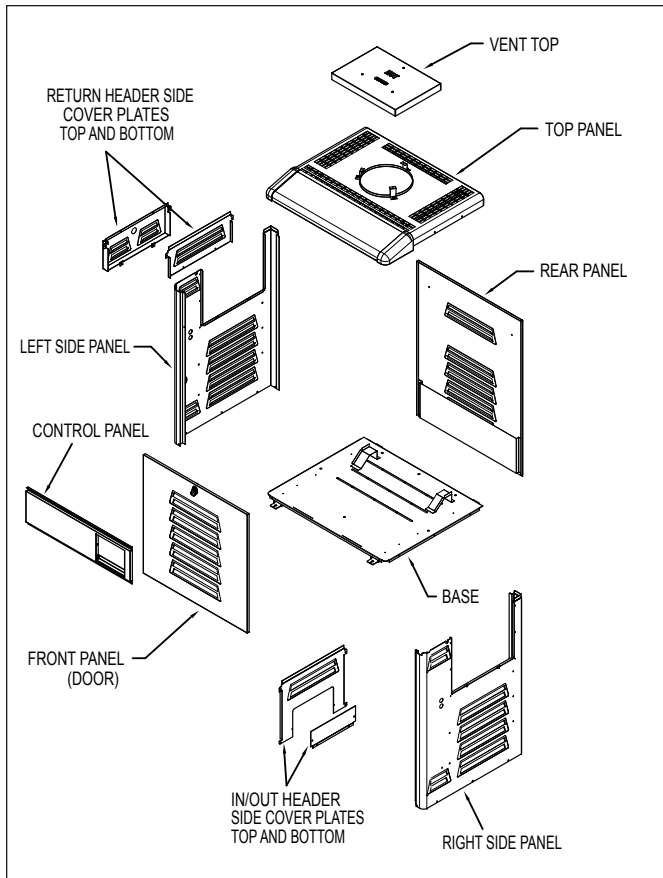


Figure 10. Legacy Model LRZ Panel Identification

4. Remove the return header side cover plates, top and bottom. See Figure 10.
5. Disconnect the blue "HiLimit" two-pin connector from the Power Interface board on the raceway. Clip any wire ties attached to the harness. Feed the "HiLimit" two-pin connector and wiring back through the way it is routed to the header so that the harness hangs free from the header, outside of the cabinet.
6. Disconnect the two "WATER TEMP" temperature sensor leads from the Power Interface board on the raceway. Clip any wire ties attached to the harness. Pull the wires out of the cabinet so that they hang free from the header, outside of the cabinet.
7. Disconnect the yellow "Water Press" two-pin connector from the Power Interface board on the raceway. Clip any wire ties attached to the harness. Feed the "Water Press" two-pin connector and wiring back through the way it is routed to the water pressure switch so that the harness hangs free from the water pressure switch, outside of the cabinet.

⚠ CAUTION

In order to prevent property damage or injury, ensure that the wiring is handled and routed carefully so as not to cause any damage to it. Additionally, be careful not to create any kinks in the water pressure switch copper tubing when handling the header.

⚠ ATTENTION

Afin d'empêcher des dégâts matériels ou des blessures, assurez-vous que le câblage est manipulé et installé soigneusement de manière à ne pas l'endommager. De plus, vous devez faire attention à ne créer aucune imperfection dans la conduite en cuivre de l'interrupteur de pression d'eau en manipulant la tête.

8. For an existing installation, remove the coupling nuts from the header and disconnect the water supply from the heater.
9. Remove the 10 bolts and washers from the inlet/outlet header and remove the header from the tube assembly.
10. Remove the 10 bolts and washers from the return header and remove the header from the tube assembly.
11. For an existing installation, remove the tube gaskets and clean the header's mating surface of any corrosion or debris. Replace the tube gaskets with new ones. Do not use any metal tools on the header surface. Scratches may compromise the seal integrity.
12. Place the inlet/outlet header over the bolts and gasketed tubes on the left side of the tube assembly. Align the bolt and tube holes in the header with the bolts and tubes in the header bar and slide the assembly together. Refer to Figure 9.

NOTE Do not reverse the position of the bypass.

13. Thread on the 10 bolts and washers and hand tighten.
14. Place the return header over the bolts and gasketed tubes on the right side of the tube assembly. Align the bolt and tube holes in the header with the bolts and tubes in the header bar and slide the assembly together.
15. Thread on the 10 bolts and washers and hand tighten.
16. Use a torque wrench to tighten the bolts on each header to 4 ft-lbs. The bolts must be tightened in the sequence indicated in Figure 11.

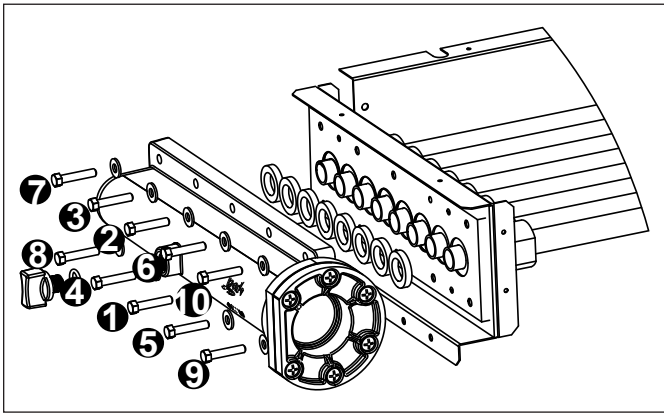


Figure 11 Header Bolt Tightening Sequence

⚠ CAUTION

Failure to tighten the header as indicated in step 16 may cause the header to leak or become permanently damaged from warping.

⚠ ATTENTION

Si le tuyau collecteur n'est pas serré conformément aux directives de l'étape 16, il risque d'avoir des fuites ou de s'endommager de façon permanente.

17. Remove the 3/4 inch button plug located in the left side panel below the inlet/outlet header and replace with the 3/4 inch wire grommet from the right side panel below the return header. The high limit leads were routed through this grommet prior to removal in step 5. Install the 3/4 inch plug in the opening where the 3/4 inch wire grommet was removed.
18. Route the blue two-pin connector attached to the high limit switches back to the Power Interface board in the raceway. Reconnect the blue "HiLimit" two-pin connector to the blue "HiLimit" connector on the Power Interface board.
19. Route the wires that attach to the temperature sensor back to the Power Interface board in the raceway. Reconnect the wires to the "WATER TEMP" terminals on the Power Interface board.
20. Install the longer syphon loop tube (part number R0483601) to the pressure switch and locate the the pressure switch in the front area of the cabinet.
21. Route the yellow two-pin connector that connects to the water pressure switch back to the Power Interface board in the raceway. Reconnect the yellow two-pin connector to the yellow "Water Press" connector on the Power Interface board.
22. Use plastic wire ties to refasten the temperature sensor, high limit switch and water pressure switch wires to each other. Bundle the wires near the control panel and fasten them with a wire tie.

⚠ CAUTION

In order to prevent property damage or injury, be sure that none of the wires are in contact with a sharp edge or a hot surface.

⚠ ATTENTION

Afin d'empêcher des dégâts matériels ou des blessures, assurez-vous qu'aucun des fils n'est en contact avec un bord tranchant ou une surface chaude.

23. Install the return header side cover plate on the right side of the unit.
24. Install the I/O header side cover plates, top and bottom on the left side of the unit.
25. Replace the front panel (door).

5.5 Connections at Heater

The Legacy Model LRZ electronic heater has a standard two (2) inch water header and coupling design. With this feature, only nominal two inch PVC or CPVC may be connected to the heater. However, by installing the appropriate pipe adapters and two short pieces of two inch plastic pipe (supplied by the installer), any size existing pipe may be fitted to the heater.

To connect a section of 2" PVC or CPVC pipe to the heater, first slip a coupling nut onto the pipe. Then prepare the end of the pipe with the proper PVC/CPVC primer and glue. Follow the manufacturer's instructions provided with the primer and glue for preparation procedures and curing times. Apply the slip-fit side of the coupling to the end of the pipe. Allow the glue to cure completely. Set the o-ring into the groove on the face of the coupling. Slide the coupling nut up to the coupling and tighten it to the threaded connection on the header. See Figure 12.

5.6 Pressure Relief Valve and Temperature Relief Valve

A pressure relief valve (PRV) is recommended in all installations, and is mandatory in any installation in

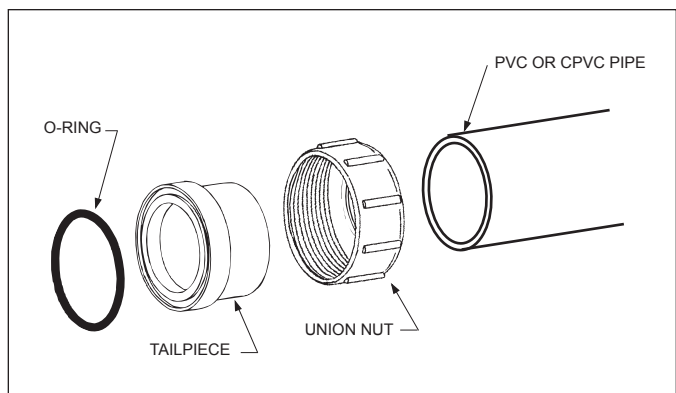


Figure 12. Piping to Heater

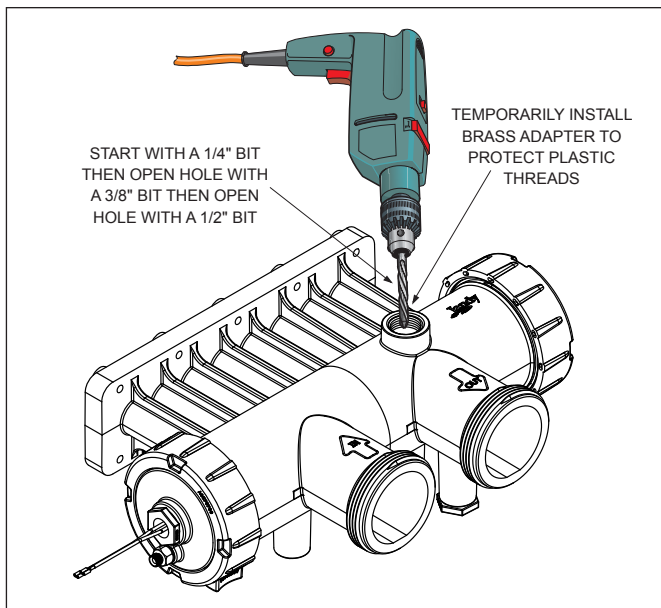


Figure 13. Drill Hole for Pressure Relief Valve

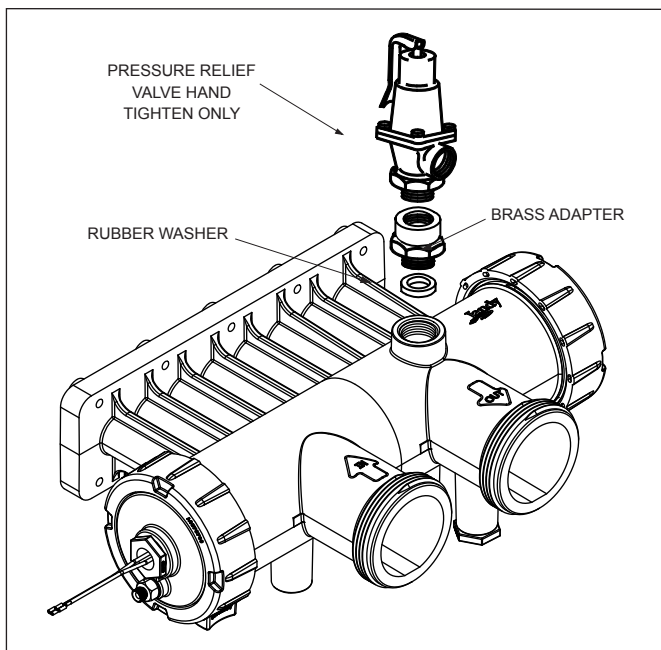


Figure 14. Pressure Relief Valve Installation

which the water flow can be shut off between the heater outlet and the pool/spa.

Some local codes may also require installation of a temperature relief valve. Check with your local codes for requirements in your area. The valve setting should be in accordance with local codes. The U.S. Product Safety Commission recommends that the water in the pool does not exceed 104°F. All temperature and/or pressure relief valves must be listed by a Nationally Recognized Testing Lab (NRTL) such as ASME, CSA, UL, or ETL.

A pressure relief valve is not supplied with the Legacy Model LRZ electronic heater. However, it is recommended that a pressure relief valve be installed and may even be required by local codes. Be sure to check any applicable installation codes in your area to determine whether a pressure relief valve is required.

See Section 11.2 (Parts List) of this manual for the appropriate kit part number.

The pressure rating of the valve should be at or below the lowest working pressure of any component in the system. The maximum working pressure of this heater is 75 psi. Any pressure relief valve installed must be certified or listed as complying with the standard for Relief Valves For Hot Water Supply Systems (ANSI Z21.22/CSA 4.4).

Follow these steps to install a pressure relief valve.

1. To protect the threads while drilling, screw the brass adapter (included with the Jandy PRV kit) into the blind threaded hole on the top of the inlet/outlet header.
2. Using the countersink in the center of the blind hole as a guide, drill a 1/4 inch hole through the plastic. See Figure 13.
3. Open the hole by reaming it with a 3/8 inch drill bit.
4. Open the hole again by reaming it with a 1/2 inch drill bit.

⚠ CAUTION

Initially drilling a 1/2" hole without reaming may cause the bit to "grab" on the plastic. This may cause personal injury or damage the plastic header.

⚠ ATTENTION

Si vous commencez à percer le trou de 1/2" sans alésage préalable, la mèche risque de « mordre » dans le plastique. Vous risquez de vous blesser ou d'endommager le tuyau collecteur de plastique.

5. Remove the brass adapter and clean the cuttings out of the hole.
6. Install the rubber washer at the bottom of the hole. See Figure 14.
7. Thread the adapter into the hole and tighten so that it seals against the rubber washer.
8. With a permanent marker, place a mark on the adapter so that the mark faces the same direction as the water connections on the header.
9. Remove the adapter from the hole.
10. Coat the threads of the pressure relief valve (PRV) with an appropriate metal to metal thread sealant.
11. Install the adapter on the PRV and tighten using two wrenches. Use the mark made earlier on the adapter to orient the PRV to the desired direction in relation to the water connections on the header.
12. Wrap the threads of the adapter with a suitable teflon thread tape.

13. Reinstall the adapter, with the PRV, into the plastic threaded hole and tighten it until the mark on the adapter is once again facing the same direction as the water connections on the header.

⚠ CAUTION

Do not use any pipe compound or pipe dope on the threads of the adapter or any part that comes in contact with the plastic headers. These compounds may damage the header over a period of time.

⚠ ATTENTION

N'utilisez ni pâte à joint ni pâte lubrifiante sur le filetage du raccord intermédiaire ou sur toute pièce qui entre en contact avec le tuyau collecteur. Ces produits risquent d'endommager le tuyau après un certain temps.

⚠ CAUTION

In order to prevent property damage, do not over-tighten. Overtightening may crack the header.

⚠ ATTENTION

Afin d'empêcher des dégâts matériels, ne serrez pas trop. Le serrage excessif peut provoquer des fissures dans la tête.

DO NOT TIGHTEN WITH A WRENCH.

Overtightening may crack the header. Route the discharge piping so that discharge from the pipe does not endanger anyone near the heater. Refer to your local installation codes for more detailed information. The valve setting should be at or below the maximum working pressure of any component in the filter system. The maximum working pressure of the Legacy Model LRZ electronic heater is 75 psig.

5.7 Auxiliary Components, Chlorinators, Ozone Generators, and Sanitizing Chemicals

The Legacy Model LRZ electronic heater is manufactured with materials that are not compatible with high concentrations of ozone, chlorine, bromine, or other sanitizing chemicals. Heater damage caused by excessive chemicals or improper ozonization is not covered by the Zodiac Pool Systems, Inc., warranty. Be sure to adhere to the following:

- When ozone is injected upstream of the heater, install an offgas mixing chamber, or an ozone bypass system between the heater and the ozone injector to prevent ozone and air from entering the heater.
- When chemical feeders are used, plumb the feeder downstream of the heater and install an in-line

check valve between the heater and the feeder. A minimum of 18" (46 cm) is required between the heater and the check valve.

- Wire any electrical chemical feeder so that it cannot operate unless the filter pump is running. If the feeder has an independent clock control, synchronize it with the filter clock.
- Never deposit chemicals directly in the pool skimmer.

Section 6. Electrical

⚠ WARNING

ELECTRICAL SHOCK HAZARD. This heater contains wiring that carries high voltage. Contact with these wires may result in severe injury or death.

⚠ AVERTISSEMENT

POSSIBILITÉ DE CHOCS ÉLECTRIQUES. Ce système de chauffage contient du filage de haut voltage. Un contact avec ces fils peut résulter en des blessures sérieuses ou la mort.

⚠ CAUTION

Label all wires prior to disconnection when servicing controls. Wiring errors can cause improper and dangerous operation. Verify proper operation after servicing.

⚠ ATTENTION

Au moment de l'entretien des commandes, étiquetez tous les fils avant de les débrancher. Des erreurs de câblage peuvent entraîner un fonctionnement inadéquat et dangereux.

6.1 General Information

Wiring connections must be made exactly as shown in the wiring diagram found on the inside of the heater door, see Figure 16. The heater must include a definite means of grounding. There is a bonding lug on the right side of the heater, where a bond wire must be attached.

6.2 Main Power

Electrical wiring must be in accordance with the latest edition of the National Electrical Code® (NEC®), ANSI®/National Fire Protection Association® (NFPA®) 70, unless local code requirements indicate otherwise. In Canada, the Canadian Electrical Code (CEC, CSA C22.1 No 1) must be followed.

The heater comes factory-wired intended for use with 240 Volt, 60 Hz AC field electrical supply. To use 120 Volt, 60 Hz AC requires rewiring of the heater.

This must be done by a certified electrician only, as with all wiring. To wire the heater for 120V, 60 Hz AC, follow the alternate 120V wiring method depicted in Figure 16. Additionally, the ignition control module must be rewired. The wire from the terminal marked IGN/240 must be removed and placed on the terminal marked IGN/120.

To wire the Legacy Model LRZ electronic heater to a 120V or 240V /60 Hertz (Hz) electrical source:

1. Remove the door of the heater.
2. Connect the wires from the power source to the leads on the right side of the heater in the space behind the raceway. See Figure 15.
3. Connect a bonding wire (8ga copper) to the bonding lug on the right side of the heater.

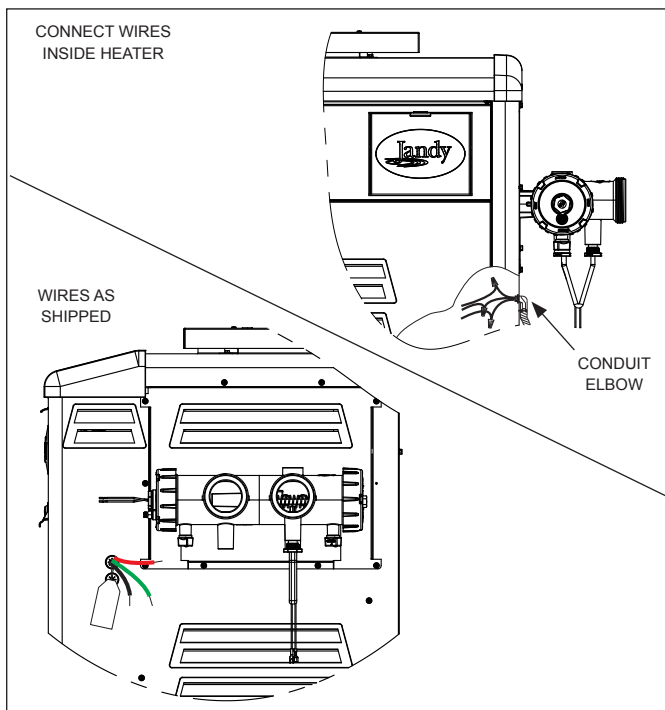


Figure 15. Field Wiring Connections

6.3 Bonding

⚠ CAUTION

To prevent premature failure of the appliance resulting from stray voltages and voltage differentials, the heater must be bonded to other equipment which is part of the pool plumbing system with a solid copper wire not smaller in diameter than 8 AWG, 6 AWG in Canada.

⚠ ATTENTION

Pour éviter le bris prématuré de l'appareil dû à des tensions vagabondes et à des différences de tension, le chauffe-piscine doit être scellé à l'équipement faisant partie de la plomberie de la piscine à l'aide d'un fil de cuivre massif dont le diamètre n'est pas inférieur à un calibre 8, et un calibre 6 pour le Canada.

Zodiac Pool Systems, Inc. requires that the appliance be connected to a "bonding loop" that includes all electrical equipment in the system and on the equipment pad. Bonding lugs must be connected with a solid copper wire not smaller than 8 AWG (6 AWG in Canada). Failure to do so will void warranty.

Additionally, in the United States the National Electrical Code and in Canada the Canadian Electrical Code, require that all metallic components of a pool structure, including reinforcing steel, metal fittings and above ground components be bonded together (forming a "bonding grid") with a solid copper conductor not smaller than a 8 AWG (6 AWG in Canada).

The NEC® and the CEC also require that the equipment and/or appliances associated with the pool water circulating system, including, but not limited to, pump motors and heaters be bonded together as part of the equipotential bonding grid. Zodiac provides a special labeled bonding lug on the right side of the heater to accommodate this requirement.

6.4 Optional Remote Controls

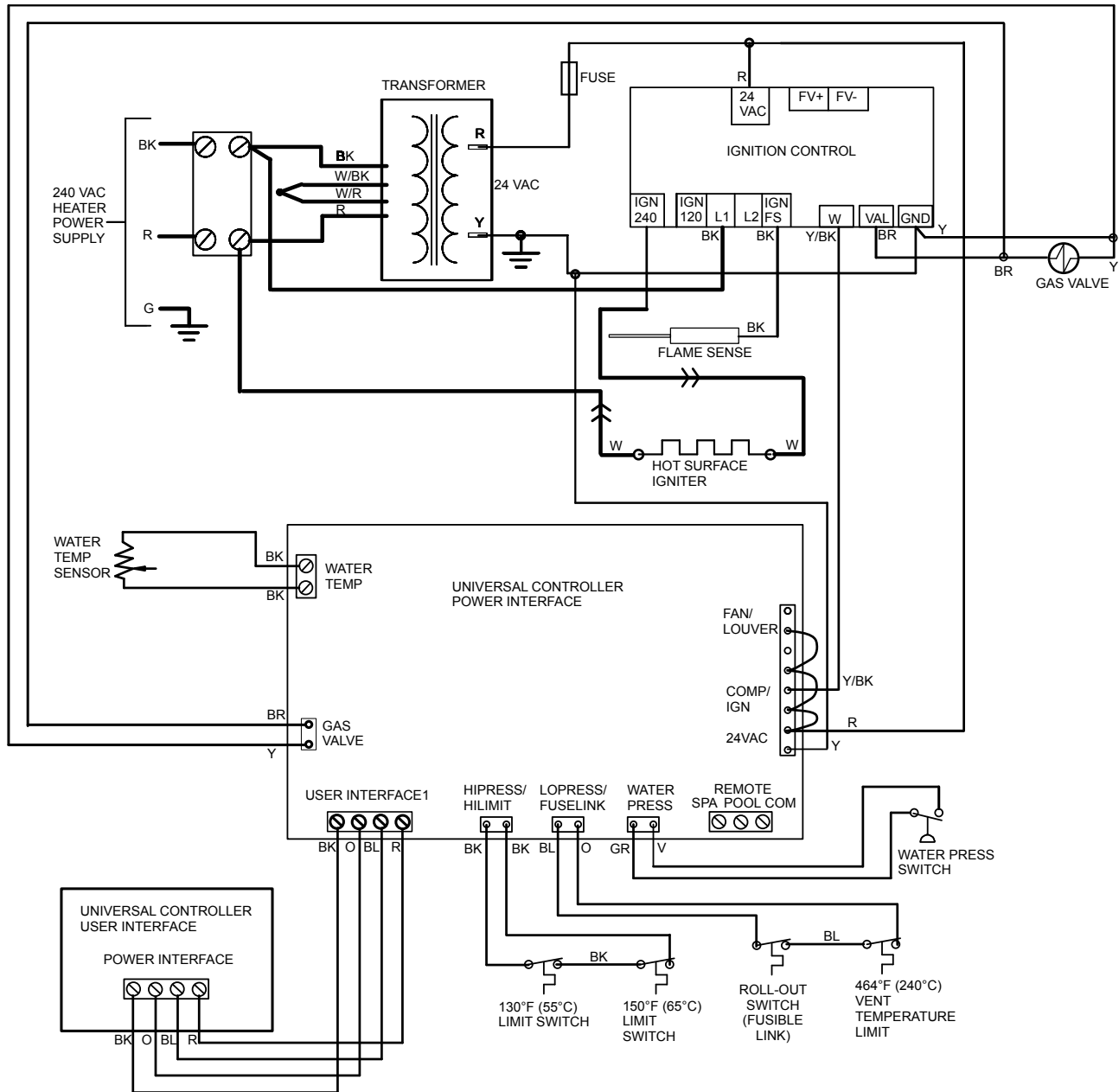
⚠ WARNING

RISK OF ELECTRIC SHOCK WHICH CAN RESULT IN SERIOUS INJURY OR DEATH. Before attempting installation or service, ensure that all power to the device is disconnected/turned off at the circuit breaker.

⚠ AVERTISSEMENT

RISQUE DE CHOC ÉLECTRIQUE POUVANT CAUSER DES BLESSURES GRAVES OU LA MORT. Avant de tenter l'installation ou d'utiliser le service, assurez-vous que l'alimentation allant vers le dispositif soit débranchée/éteinte au niveau du disjoncteur du circuit. Branchez seulement à un circuit protégé par un disjoncteur de mise à la terre.

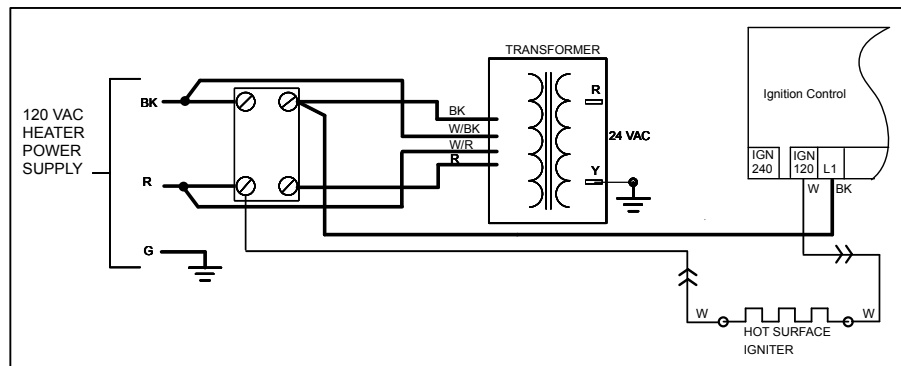
Electrical wiring must be in accordance with the latest edition of the National Electrical Code® (NEC), ANSI/National Fire Protection Association (NFPA) 70, unless local code requirements indicate otherwise. In Canada use C22.1 Canadian Electrical Code Part 1.



Jandy®
Pro Series
by ZODIAC®

— Factory Wired 24V
— Factory Wired 120V/240V
- - - Optional 120V Wiring

BK - BLACK
BL - BLUE
BR - BROWN
G - GREEN
GR - GRAY
O - ORANGE
R - RED
V - VIOLET
W - WHITE
W/BK - WHITE WITH BLACK TRACE
W/R - WHITE WITH RED TRACE
Y - YELLOW
Y/BK - YELLOW WITH BLACK TRACE



ALTERNATE 120 VAC WIRING

H03028000 Rev K

Figure 16. Legacy Model LRZ electronic Connections/Schematic Wiring Diagram

6.4.1 Connection to a Remote Pool-Off-Spa Selector (3-Wire Connection)

6.4.1.1 Install the Remote Pool-Off-Spa Selector

1. Turn off the power to both the pool/spa control system and the heater unit. Refer to Figure 17.
2. Remove the front panel door from the front of the heater to access the raceway.
3. Run the wires from the pool/spa control system through the opening, located on the lower right or left hand side of the heater.
4. Connect the wiring from the pool/spa control system to the heater remote control terminal. See Figure 17.
5. Restore power to the heater and the pool/spa control system.

6.4.1.2 Configure the Control Panel

1. Make sure the control is in the **OFF** mode.
2. To enter the Service Setup mode, press and hold the **MENU**, **POOL**, and **SPA** buttons for 5 seconds.

NOTE The display will revert back to OFF after one minute since the last key press.

3. Press the Up or Down button to display **REMOTE**. Press the **MENU** button. The **SELECT REMOTE OFF** (default remote) appears. Use the Up or Down button to scroll through the Remote options. When you reach **HI-LO-COM**, press the **MENU** button to select the remote. Press **POOL** or **SPA** to exit the Service Setup mode.

6.4.2 Connection to an AquaLink® RS, PDA, Remote TSTAT (2-Wire Connection) or Fireman's Switch

6.4.2.1 Install the Remote TSTAT

1. Turn off the power to both the pool/spa control system and the heater unit.
2. Remove the front panel door from the front of the heater to access the raceway.
3. Run the wires from the pool/spa control system through the opening, located on the lower right or left hand side of the heater.
4. Connect the wiring from the pool/spa control system to the heater remote control terminal. See

Figure 18.

5. Restore power to the heater and the pool/spa control system.

NOTE If you install a time clock to control the filter pump operation, it is recommended that the time clock have its own low voltage (Fireman's) switch to turn off the heater before turning off the pump. The switch should shut off the heater about 15 minutes before the filter pump shuts off. This will allow for a more efficient operation by removing any residual heat contained in the heat exchanger back to the pool.

6.4.2.2 Configure the Control Panel

1. Make sure the control is in the **OFF** mode.
2. To enter the Service Setup mode, press and hold the **MENU**, **POOL**, and **SPA** buttons for 5 seconds.

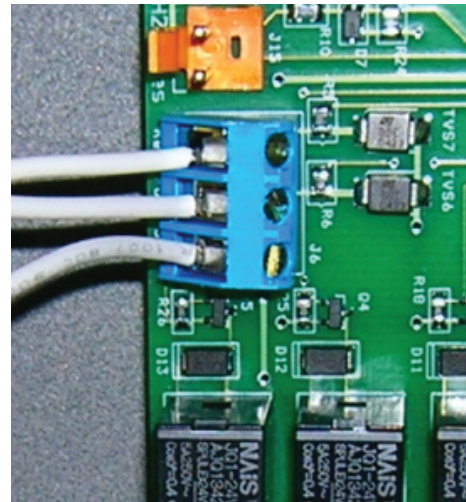


Figure 17. Remote Pool-Off-Spa Connection (3-Wire Connection)

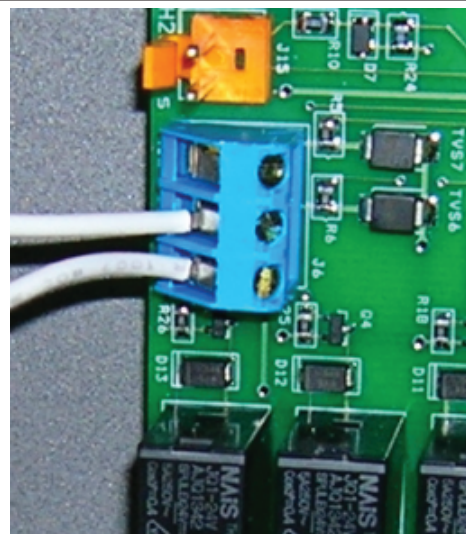


Figure 18. AquaLink® RS or Remote TSTAT Connection (2-Wire Connection)

NOTE The display will revert back to OFF after one minute since the last key press.

3. Press the Up or Down button to display **REMOTE**. The **SELECT REMOTE OFF** (default remote) appears. Use the Up or Down button to scroll through the Remote options. When you reach **REMOTE TSTAT**, press the **MENU** button to select the remote. Press **POOL** or **SPA** to exit the Service Setup mode.
4. Press **SPA**. Adjust the setpoint to the maximum setting of 104 °F.

6.4.3 Connection to a Secondary User Interface

The Legacy Model LRZ electronic pool/spa heater can also be controlled remotely by installing a second wall mountable User Interface. Please order Zodiac part number R0467500. This kit contains the second User Interface, wall mounting backplate, and necessary hardware.

Section 7. Operating Instructions

7.1 Normal Operation

The Legacy Model LRZ electronic heater is capable of automatic operation based on a call for heat at a preset temperature. The heater has an internal safety system which allows operation in a variety of conditions and prevents operation when certain adverse conditions are encountered. The heater is capable of diagnosing problems within the safety control scheme, enabling faster service and less down time in the event of a failure.

When the heater's transformer is provided with a 120 VAC or 240 VAC supply, it in turn provides a 24 VAC signal to the safety circuit. When water is flowing through the heater, and the temperature of the water entering the heater is below the temperature control setting, an operating cycle is initiated by the automatic control. The control circuit is closed, the igniter is energized. After a 40 second igniter heat-up, the gas valve is opened. Gas flows through the burners, is mixed with air in the combustion chamber, and is ignited by the hot surface igniter. Operation will continue until the temperature of the water entering the heater reaches the temperature control setting.

If ignition is unsuccessful, or if the flame fails during normal operation, the ignition control shuts off the gas valve. To reset the Legacy heater to provide three (3) additional attempts without waiting an hour, turn the control off and return it to either pool or spa. The ignition control will automatically reset itself and restart the ignition after one hour.

7.2 Start-Up

WARNING

For your safety, when starting the heater, keep your head and face well away from the burner area to prevent any risk of personal injury.

AVERTISSEMENT

Pour votre sécurité personnelle lorsque vous mettez l'appareil en marche, tenez votre tête et votre visage loin du brûleur pour éviter tout risque de blessure.

WARNING

Vent pipes, and heater tops get hot! These surfaces can cause serious burns. Do not touch these surfaces while the heater is in operation.

AVERTISSEMENT

Les tuyaux d'aération et le dessus de l'appareil deviennent chauds! Ils peuvent causer de graves brûlures. Ne touchez pas à ces surfaces lorsque l'appareil est en marche.

CAUTION

Do not use this heater if any part has been under water. Immediately call a qualified service technician to inspect the heater and replace any part of the control system and any gas control which has been under water.

ATTENTION

N'utilisez pas cet appareil s'il a été plongé dans l'eau, même partiellement. Faites inspecter l'appareil par un technicien qualifié et remplacez toute partie du système de contrôle et toute commande qui ont été plongés dans l'eau.

CAUTION

Should overheating occur or the gas supply fail to shut off, turn off the manual gas control valve to the heater.

ATTENTION

En cas de surchauffe ou si l'alimentation en gaz ne s'arrête pas, fermez manuellement le robinet d'arrêt de l'admission de gaz.

⚠ CAUTION

Do not attempt repairs on the gas controls or appliance. Tampering is dangerous and voids all warranties.

⚠ ATTENTION

Ne tentez pas d'effectuer des réparations au système de régulation du débit du gaz ou à l'appareil. Toute modification non autorisée est dangereuse et entraîne l'annulation de toutes les garanties.

⚠ CAUTION

Keep all objects off the top of the heater. Blocking air flow could damage the heater, and may void the warranty.

⚠ ATTENTION

Ne posez aucun objet sur le dessus de l'appareil. Il pourrait empêcher la circulation de l'air, ce qui risquerait d'endommager l'appareil et d'annuler la garantie.

Be sure that there is water in the pool and that the surface level is above the skimmer or other inlet of the pool's filter system.

Confirm that pool water is flowing normally through the pool system and equipment. With any new pool or spa installation, operate the filter pump with the heater off long enough to completely clean the water. This will remove any installation residue from the water. Clean the filter at the end of this operation before starting the heater. Start the heater in accordance with the Operating Instructions section of this manual, with particular attention to the lighting and shutdown instructions and temperature control operation.

The heater may not start on the first try. Air in the gas line or other start-up situations may cause it to cycle. It will lock out if ignition is not achieved in three attempts, see Section 9.2, "Service Codes". To reset the Legacy Model LRZ electronic heater to provide three (3) additional attempts, turn off the control and then put it back in either the Pool or Spa mode.

When the heater starts, immediately feel the outlet header of the heater to confirm that there is adequate water flow. The header should not be hot. Normally, water temperature will rise only a few degrees as it passes through the heater, and a "hot" header or pipe indicates low water flow.

⚠ WARNING

When the heater is fired for the first time, the combustion chamber refractory binder material is driven out by the heat of the flame. White smoke and/or sharp odors may be emitted from the vent during this period. Do not inhale combustion product fumes at any time, and especially when these fumes are being emitted. This "burn-in" period will last only a few minutes.

⚠ AVERTISSEMENT

Lorsque l'appareil est mis en marche pour la première fois, le matériau liant réfractaire de la chambre de combustion est expulsé par la chaleur de la flamme. De la fumée blanche et de fortes odeurs peuvent se dégager du tuyau d'aération à ce moment-là. N'inhalez les fumées de combustion à aucun moment, surtout au moment où elles sont émises. Cette période de combustion ne durera que quelques minutes.

When raising the temperature of a cold pool, program the time clock to turn the pump off 23 hours after the start time (e.g., If the start time is 2:00 PM, then set the stop time at 1:00 PM.). This lets the filter system and heater operate continuously until the water reaches the temperature setting on the temperature control. When that happens, the heater will automatically shut off, but the filter pump will keep running.

7.3 Operating the Controller

Your new Legacy Model LRZ electronic Pool Heater is controlled by an advanced microprocessor based controller that provides a sophisticated yet simple interface to operate your heater for maximum efficiency and enjoyment of your pool. To locate the control buttons, see Figure 19.

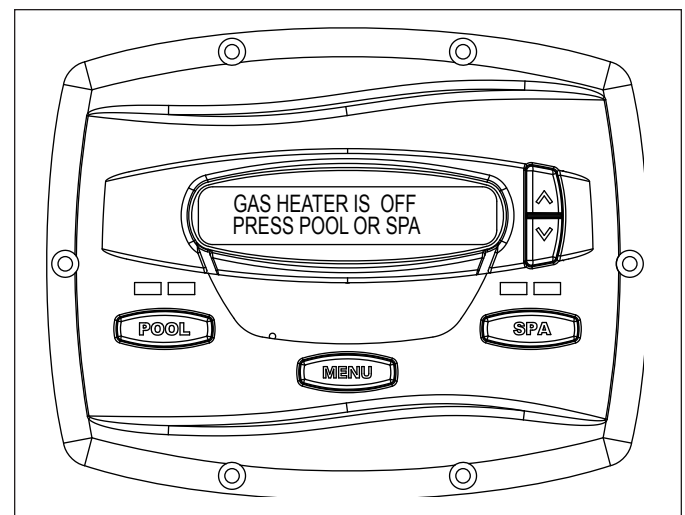


Figure 19. Main Control Panel

7.3.1 Off Mode

When the control panel is turned off, the screen displays **GAS HEATER IS OFF PRESS POOL OR SPA**.

7.3.2 Pool Mode - (Normal Heat)

To enable the pool mode, press **POOL**. The associated left green LED indicator will light and the unit will display **SET:XXX°**.

NOTE XXX represents the current temperature setting on the control. The default setting for pool temperature is 80°F (26°C).

You can change the temperature set point by pressing the **Up** or **Down** button. Repeatedly press the **Up** or **Down** button until you reach the desired temperature set point. After 5 seconds of inactivity, the new set point is stored in memory.

When the water temperature falls to 1 degree below the temperature setting, the control will start the heater and the associated right LED will light RED.

7.3.3 Spa Mode - (Normal Heat)

To enable the spa mode, press **SPA**. The associated left green LED indicator will light and the unit will display **SET:XXX°**.

NOTE XXX represents the current temperature setting on the control. The default setting for spa temperature is 102°F (38°C).

You can change the temperature set point by pressing the **Up** or **Down** button. Repeatedly press the **Up** or **Down** button until you reach the desired temperature set point. After 5 seconds of inactivity, the new set point is stored in memory.

When the water temperature falls to 1 degree below the temperature setting, the control will start the heater and the associated right LED will light RED.

7.4 User Setup Options

The User Setup options allow the user to select specific Languages, Temperature Scale, Spa Timer, and Display Light options.

7.4.1 Language Setup

1. Make sure the control is in the **OFF** mode.
2. To enter the User Setup mode, press and hold the **MENU** button for 5 seconds.

NOTE The display will revert back to **OFF** after one minute since the last key press.

3. To select a language, use the **Up** or **Down** button to display **SELECT USER SETUP LANGUAGE**. Press the **MENU** button. The **SELECT LANGUAGE ENGLISH** (default language)

appears, use the **Up** or **Down** button to scroll through the language options. When you reach the desired language, press the **MENU** button to select the language. Press **POOL** or **SPA** to exit the User Setup mode.

7.4.2 Temperature Scale Setup

1. Make sure the control is in the **OFF** mode.
2. To enter the User Setup mode, press and hold the **MENU** button for 5 seconds.
3. To select temperature scale, use the **Up** or **Down** button to scroll through to display **SELECT USER SETUP TEMPERATURE SCALE**. Press the **MENU** button. The **SELECT TEMP SCALE °F:** (default temperature scale) appears, use the **Up** or **Down** button to scroll to display **SELECT TEMP SCALE °C:**. When you reach the desired temp scale, press the **MENU** button to select. Press **POOL** or **SPA** to exit the User Setup mode.

7.4.3 Spa Timer Setup

1. Make sure the control is in the **OFF** mode.
2. To enter the User Setup mode, press and hold the **MENU** button for 5 seconds.
3. To select spa timer, use the **Up** or **Down** button to scroll through to display **SELECT USER SETUP SPA TIMER**. Press the **MENU** button. The **SELECT SPA TIMER CONTINUOUS:** (default spa timer setting) is displayed. To turn the spa on or off indefinitely, press the **MENU** button to select.

To select the length of time for the spa to run, use the **Up** or **Down** button to scroll to display **SELECT SPA TIMER TIME SELECTION**. Press the **MENU** button to select. The display **SELECT SPA TIME 01:00 HRS:** (default time setting) is displayed. Use the **Up** or **Down** button to select the length of time for the spa to run (between 00:15 to 23:00 hours incremented by 00:15 minutes). Press the **MENU** button to select how long the spa will run. Press **POOL** or **SPA** to exit the User Setup mode.

7.4.4 Display Light Setup

1. Make sure the control is in the **OFF** mode.
2. To enter the User Setup mode, press and hold the **MENU** button for 5 seconds.
3. To select display light setup, use the **Up** or **Down**

button to scroll through to display **SELECT USER SETUP DISPLAY LIGHT**. Press the **MENU** button. The **SELECT DISPLAY LIGHT 2 MIN TIMEOUT:** (default display light setting) is displayed. This option allows the display light to turn off after 2 minutes. Press the **MENU** button to select. Use the **Up** or **Down** button to scroll to display **SELECT DISPLAY LIGHT LIGHT OFF:**, this option allows the display light to turn off, press the **MENU** button to select. Use the **Up** or **Down** button to scroll to display **SELECT DISPLAY LIGHT LIGHT ON:**, this option allows the display light to turn on, press the **MENU** button to select. Press **POOL** or **SPA** to exit the User Setup mode.

7.5 Set Point Lockout

Make sure the control is in the **ON** mode (**POOL** or **SPA**), press and hold the **Up** and **Down** buttons for 5 seconds. The set point will be locked and the control will operate in the mode it was in when the Set Point Lockout occurred. If an attempt to change the set point is made while the control is in Set Point Lockout, the control will display **SET POINT LOCKED**. To unlock the Set Point Lockout, press and hold the **Up** and **Down** buttons for 5 seconds. The unit will display **SET POINT UNLOCKED**.

7.6 Lighting and Shutdown Procedures

⚠ WARNING

Do not attempt to light the heater with the door off. Doing so may cause severe bodily injury.

⚠ AVERTISSEMENT

Ne tentez pas d'allumer l'appareil sans que la porte soit en place. Vous pourriez être victime de blessures corporelles graves.

Before starting your heater, be sure that all of the functions and limits of the Legacy controller have been set according to the previous sections of this manual. Once the control is set to your preferences, follow the instructions outlined below. Read and follow all safety instructions first. A more detailed set of lighting and shutdown instructions are listed on the label located on the inside of the heater door and in Figure 21.

7.6.1 Lighting the Heater

Lighting instructions are as follows:

1. Turn off all electrical power to the heater at the main junction box.
2. Remove the heater door and turn the heater gas valve to off.

3. Wait 5 minutes before trying to start the heater.
4. Turn the gas valve control knob counterclockwise to ON. See Figure 20.

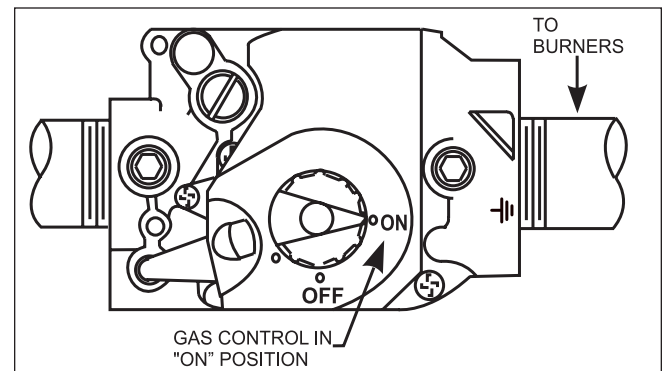


Figure 20. Gas Valve

5. Replace the heater door.
6. Turn on electrical power to the heater.
7. Turn on the filter pump.

⚠ WARNING

In order to avoid possible serious injury, do not exceed the recommended safe maximum temperature as specified in Section 1.2.

8. Set the heater control to the "SPA" mode. If the temperature of the water exceeds the thermostat setting it is necessary to increase the thermostat setting to exceed the water temperature. Adjust the thermostat setting (desired temperature) to be greater than the water temperature. The igniter lights the burner when the thermostat calls for heat.
9. Set the time clock, if one is installed.

7.6.2 Shutdown

Complete shutdown instructions are as follows:

1. Set both temperature controls to their lowest setting.
2. Turn off the control. Make sure the display shows that the heater is off.
3. Turn off all electrical power to the heater at the junction box.
4. Open the heater door and turn the gas valve knob clockwise to off.
5. Shut off the external gas supply valve to the heater.

FOR YOUR SAFETY READ BEFORE OPERATING

⚠WARNING: If you do not follow these instructions exactly, a fire or explosion may result, causing property damage, personal injury or loss of life.

- A. This appliance does not have a pilot light. It is equipped with an ignition device which automatically lights the heater. Do NOT try to light the burners by hand.
- B. BEFORE OPERATING, smell all around the appliance area for gas. Be sure to smell next to the floor because some gas is heavier than air and will settle on the floor.
WHAT TO DO IF YOU SMELL GAS
 - Do not try to light any appliance
 - Do not touch any electric switch; do not use any phone in your building.
 - Immediately call your gas supplier from a neighbor's phone. Follow the gas supplier's instructions.
 - If you cannot reach your gas supplier, call the fire department.
- C. Use only your hand to push in or turn the gas control knob. Never use tools. If the knob will not push in or turn by hand, don't try to repair it, call a qualified service technician. Force or attempted repair may result in a fire or explosion.
- D. Do not use this appliance if any part has been under water. Immediately call a qualified service technician to inspect the appliance and to replace any part of the control system and any gas control which has been under water.

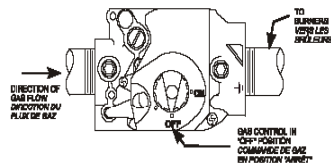
PRÉCAUTIONS À LIRE AVANT D'UTILISER

⚠AVERTISSEMENT: Si vous ne suivez pas ces instructions à la lettre, il y a risque d'incendie ou d'explosion, pouvant entraîner des dégâts matériels et des blessures graves voire mortelles.

- A. Cet appareil ne possède pas de veilleuse. Il est équipé d'un dispositif qui allume automatiquement le chauffe-eau. Ne PAS essayer d'allumer les brûleurs à la main.
- B. AVANT DE METTRE EN MARCHÉ, humer pour s'assurer de l'absence de gaz autour de l'appareil. Sentir à proximité du sol car certains gaz sont plus lourds que l'air et ne s'élèvent pas.
MARCHE À SUIVRE EN CAS D'ODEUR DE GAZ
 - Ne pas tenter d'allumer aucun appareil.
 - Ne toucher à aucun interrupteur ; ne pas utiliser le téléphone dans le bâtiment.
 - Appeler immédiatement la compagnie de gaz en utilisant le téléphone d'un voisin. Suivre les instructions données par celle-ci.
 - Si l'on n'arrive pas à joindre la compagnie de gaz, appeler les pompiers.
- C. Enfoncer et tourner le bouton de commande du gaz à la main uniquement. Ne pas utiliser d'outil. Si le bouton résiste, ne pas essayer de le réparer ; appeler un réparateur qualifié. Une réparation forcée ou mal faite peut causer un incendie ou une explosion.
- D. Ne pas utiliser cet appareil si une de ses pièces a été sous l'eau. Appeler immédiatement un réparateur qualifié pour inspecter l'appareil et remplacer toute partie du circuit de commande et toute commande de gaz qui aurait subi des dégâts d'eau.

OPERATING INSTRUCTIONS

1. STOP! Read the safety information above on this label.
- 2.* Set the thermostat for POOL and SPA to 70°F(21°C), or the lowest possible setting and switch the controller mode to OFF.
3. Turn off all electric power to the appliance.
4. This appliance is equipped with an ignition device which automatically lights the heater. Do not try to light the burners by hand.
5. Remove the heater door.
6. Turn gas control knob clockwise ➡ to OFF.
7. Wait five (5) minutes to clear out any gas. Then smell for gas, including near the floor. If you smell gas, STOP! Follow "B" in the safety information above on this label. If you don't smell gas, go to next step.
8. Turn gas control knob counterclockwise ⬅ to ON.
9. Replace control access panel
10. Turn on all electric power to appliance.
- 11.* Set thermostat to desired settings for "Pool and Spa" and switch the controller mode from OFF to either POOL or SPA.
12. If the appliance will not operate, check that the filter pump is on, the filter is clean and water is flowing to the pool. Otherwise, follow the instructions "To Turn Off Gas To Appliance" and call your service technician or gas supplier.



MODE D'EMPLOI

1. ARRÊT! Lire les informations de sécurité fournies ci-dessus.
- 2.* Régler le thermostat pour PISCINE et SPA à 70°F (21°C), ou le plus bas arrangement, et commutiez le contrôleur à ARRÊT.
3. Couper toute arrivée de courant de l'appareil.
4. Cet appareil est équipé d'un dispositif qui allume automatiquement le chauffe-eau. Ne pas essayer d'allumer les brûleurs à la main.
5. Retirer la porte du chauffe-eau.
6. Tourner le bouton de commande du gaz dans le sens horaire ➡ jusqu'à ARRÊT.
7. Attendre cinq (5) minutes que le gaz se soit dissipé. Puis humer pour s'assurer de l'absence de gaz, en particulier au niveau du sol. Si cela sent le gaz, ARRÊTER tout de suite ! Suivre les précautions de la partie "B" ci-dessus. S'il n'y a pas d'odeur de gaz, passer à l'étape suivante.
8. Tourner le bouton de commande du gaz dans le sens anti-horaire ⬅ jusqu'à ON.
9. Remettre le panneau d'accès aux commandes.
10. Remettre l'appareil électrique sous tension.
- 11.* Régler le thermostat aux réglages désirés pour PISCINE et SPA et commutiez le contrôleur de ARRÊT, à soit PISCINE ou SPA.
12. Si l'appareil électrique ne fonctionne pas, s'assurer que la pompe à filtre est allumée, que le filtre est propre et que la piscine est alimentée en eau. Sinon, suivre les instructions de "Coupe de l'arrivée de gaz de l'appareil" et appeler le réparateur ou la compagnie de gaz.

Jandy
ProSeries
by ZODIAC

TO TURN OFF GAS TO APPLIANCE

- 1.* Set the thermostat for POOL and SPA to 70°F(21°C) or the lowest possible setting and switch the controller mode to OFF.
2. Turn off all electric power to the appliance if service is to be performed.
3. Turn gas control knob clockwise ➡ to OFF.
4. Replace control access panel.

*See manual for details of operation of thermostat control.

H0324900 Rev A

COUPURE DE L'ARRIVÉE DE GAZ DE L'APPAREIL

- 1.* Régler le thermostat pour PISCINE et SPA à 70°F (21°C), ou le plus bas arrangement, et commutiez le contrôleur à ARRÊT.
2. Couper toute arrivée de courant de l'appareil s'il doit subir une réparation.
3. Tourner le bouton de commande du gaz dans le sens horaire ➡ jusqu'à OFF.
4. Remettre le panneau d'accès aux commandes.

*Voir le manuel pour les détails concernant l'opération du contrôle de thermostat.

Figure 21. Lighting and Shutdown Instructions

7.7 Adjusting the Water Pressure Switch

⚠ CAUTION

The water pressure switch should be adjusted to turn the heater off when the pump is off. Setting the switch to close at too low of a flow can damage the appliance. Adjust the switch to turn the heater off, not on.

⚠ ATTENTION

Le manocontact de pression d'eau doit être réglé de façon à ce que l'appareil cesse de fonctionner si la pompe s'arrête. Si le manocontact est réglé pour se fermer lorsque le débit d'eau est trop faible, l'appareil risque de s'endommager. Réglez le manocontact pour qu'il arrête l'appareil, et non pour qu'il le mette en marche.

The pressure switch is preset at the factory for activation at 2 psi (14 kPa). Do not adjust the pressure switch if the heater is installed more than 15 feet (4.57 m) below the pool surface. Consult your local Jandy representative for recommendations.

On some installations, the piping from the heater to the pool is very short. The back pressure could be too low to trigger the pressure switch. If this happens, it may be necessary to install a directional fitting or elbows where the return line enters the pool. This will increase back pressure enough for the heater to operate properly.

Make sure the pool filter is clean before making any pressure switch adjustment. A dirty filter will restrict the water flow and the pressure switch cannot be adjusted properly.

To adjust the pressure switch, see Figure 22 and proceed as follows:

1. Set the heater control to the "OFF" mode.
2. Remove the side panel above the front header to access the water pressure switch.

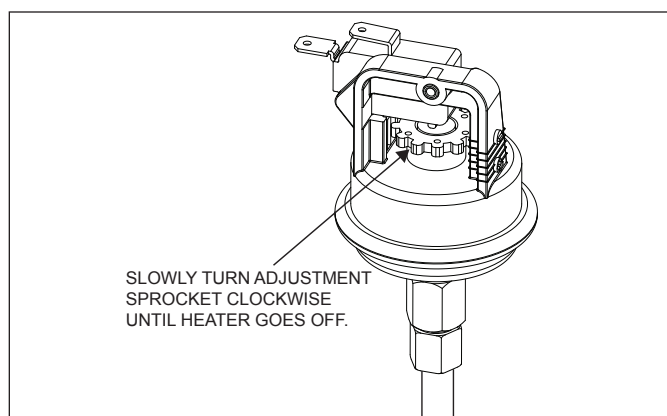


Figure 22. Adjustment of Pressure Switch

3. Start the filter pump and confirm by means of a voltmeter that the pressure switch closes (if the switch fails to close, replace it with a switch that has a lower minimum setting).
4. Set the heater control to either "POOL" or "SPA". Heater should start.
5. With your fingers, turn the adjustment sprocket very slowly clockwise until the heater goes off.
6. Slowly turn the pressure switch adjustment sprocket **counterclockwise** one-quarter turn. The heater should come back on.
7. Check the adjustment by turning the filter pump OFF. The burners should shut off immediately. If they do not, restart the filter pump and repeat Steps 6 and 7. Check the adjustment again.
8. Return the pool temperature control to the desired temperature.

It may be necessary to repeat these steps to get a proper setting. The switch must be set so that the heater will not fire unless the pump is running. If a proper setting cannot be reached, contact the factory service department.

7.8 Temperature Rise

NOTE A temperature rise measurement kit is needed to perform this test. order part number R0336000.

The Legacy pool and spa heaters have an internal bypass which accommodates a wide range of water flow. The bypass is easily adjustable to change the temperature rise for optimum performance and length of heater life. The bypass assures constant heat exchanger flow even though flow through the filter system will vary depending on how dirty the filter is.

For most installations, an external bypass valve is not needed in the heater water piping. This is due to the large size of the heater's internal bypass valve. If the pump flow rate is known to exceed 125 gpm (7.9 lps), an external bypass may be needed to assure proper heater operation.

Water flow should be confirmed upon start-up of the heater and in most servicing situations. If the flow is not normal, corrections must be made to the pool system. Flow is evaluated by determining the water temperature rise through the heat exchanger.

Before checking the temperature rise, make sure that the pool filter is clean and that gas supply and manifold pressures are correct. If necessary, clean all components of the filter system. Temperature rise is measured in the return header of the Legacy. To measure the temperature rise, turn off the filter pump and remove the plastic plug protruding through the cabinet on the return header side of the heater. See Figure 23. With the plug removed, install the special

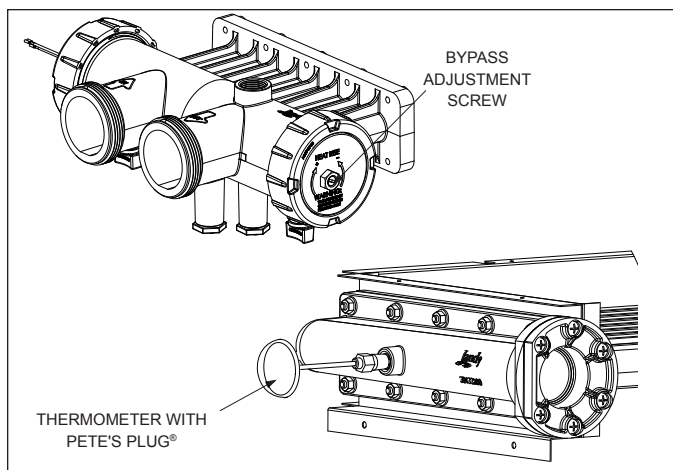


Figure 23. Temperature Rise Measurement

thread adapter and Pete's Plug® fitting and insert a pocket thermometer. A temperature rise measurement kit is available through your Jandy distributor. See Section 11 of this manual for the correct kit number.

The internal bypass can be adjusted by means of a screw on the right-hand side of the header. To adjust the temperature rise to within the ranges specified in Table 6, proceed as follows:

1. If the piping system has an external bypass valve, close it.
2. Set the heater's control panel to the "OFF" position.
3. Start the filter pump.
4. After three minutes, note and record the thermometer reading. This is the pool water temperature.
5. Start the heater by setting the control panel to either "POOL" or "SPA". Allow the heater to operate for five minutes or more. Note and record the thermometer reading. Subtract pool water temperature from this reading. This difference is the temperature rise. Refer to Table 6. If your measured temperature rise is within the range designated for your heater, skip steps 6 through 8.
6. Locate the bypass adjustment screw on the right-hand side of the header, see Figure 23. Loosen the nut so that the screw can be adjusted. A slight water leak past the nut may be expected. Turn the screw counterclockwise to decrease the temperature rise, and clockwise to increase the temperature rise as needed to achieve the ranges in Table 6. After the adjustment, tighten the nut so that no leaks occur.
7. If the temperature rise is too low and cannot be raised by means of the adjustment screw, the flow is in excess of 125 GPM (7.9 lps). An external bypass will need to be installed, or if one already exists, open the external bypass valve gradually until the temperature range in Table 6 is achieved.

8. If it was necessary to adjust the external bypass as outlined in step 6, scribe a line on the bypass shaft and case to mark the correct adjustment position. Wire or remove the valve handle to prevent tampering.

**Table 6. Water Temperature Rise and Flow Rates
(Measured at Return Header)**

Model	Minimum Temp Rise, °F (°C)	Maximum Temp Rise, °F (°C)	Minimum System Flow GPM (lps)
125	7 (4)	10 (5)	30 (1.9)
175	10 (6)	13 (7)	30 (1.9)
250	16 (9)	20 (11)	30 (1.9)
325	20 (11)	26 (14)	30 (1.9)
400	23 (13)	29 (16)	30 (1.9)

In a system without external bypass, it may be necessary to make changes. If temperature rise is too low, a manual bypass must be installed. If temperature rise is too high, there is inadequate flow, possibly requiring a change to the piping system or a larger pump. Before proceeding with either remedy, verify proper heater operation. Low gas input results in low temperature rise and vice-versa. A problem with the heater internal bypass assembly also affects measured temperature rise.

Section 8. Maintenance

8.1 Water Chemistry

Proper Water Balance is the key to the enjoyment of your pool or spa experience and to the long life of your heater.

The pH of your pool or spa's water is one of the factors that has the most impact on indicating how properly balanced the water is. The other factors are: temperature, total alkalinity, calcium hardness and total dissolved solids. Cold water is typically more acidic (corrosive), while hot water that is not properly balanced could lead to a scale forming (basic) condition. While the heater is in operation, if the PH is allowed to rise above 7.8 and the calcium hardness and total alkalinity are not properly maintained; calcium in the water could lose solubility, coating the copper tubes inside the heat exchanger. This will restrict the flow of water resulting in reduced efficiency and possible damage to the heater.

If the pH is allowed to drop below 7.2, and the alkalinity is not properly maintained, the water will become more acidic. Acidic water has a tendency to dissolve metal components in the pool plumbing with the copper heat exchanger in the heater being a prime target.

PH, Total Alkalinity (TA), temperature, Calcium Hardness and Total Dissolved Solids (TDS) play a role in whether the water is either corrosive or scale forming. These factors are combined in the Langelier Saturation Index, which is a method for determining whether or not water is properly balanced. See table (7)

Table 7. Water saturation index

Saturation Index = pH + AF + CF + TF -12.1								
A-Factor=(AF), C-Factor=(CF), T-Factor=(TF)								
Total Alkalinity			Calcium Hardness			Temperature		
A-Factor			C-Factor			T-Factor		
PPM		Factor Value	PPM		Factor Value	°F		Factor Value
5	=	0.7	5	=	0.9	32	=	0.0
25	=	1.4	25	=	1.0	37	=	0.1
50	=	1.7	50	=	1.3	46	=	0.2
75	=	1.9	75	=	1.5	53	=	0.3
100	=	2.0	100	=	1.6	60	=	0.4
150	=	2.2	150	=	1.8	66	=	0.5
200	=	2.3	200	=	1.9	76	=	0.6
300	=	2.5	300	=	2.1	84	=	0.7
400	=	2.6	400	=	2.2	94	=	0.8
800	=	2.9	800	=	2.5	105	=	0.9
1000	=	3.0	1000	=	2.6	128	=	1.0
A saturation index of 0 is perfectly balanced								
A negative saturation index has corrosive tendencies								
A positive saturation index has scaling tendencies								
A saturation index of +0.3 or -0.3 should be used for visible, cosmetic pool surfaces.								

NOTE The index should be maintained between +0.3 and -0.3. A positive value is more acceptable than a negative value.

The practice of putting tablet-based sanitizers in the skimmer basket can produce heavily chlorinated water with very low pH in contact with metal parts of the heater that can cause serious damage. Practices like this should be discontinued and the use of floating sanitizer dispensers and check valves as backflow preventers with inline erosion-style feeders should be encouraged.

If acidic conditions are present, there could be signs of metal in the pool water that could cause staining on the floor of your pool. This might manifest itself in the form of brown stains on the finish of your pool bottom or pool water discoloration. Your local pool dealer can test for metals in your water or can provide you with a test kit.

Every effort should be made to maintain the water balance of your pool or spa in the proper range. Ignoring this very important component of your pool's water chemistry can make the water less enjoyable to bathe in and result in permanent damage to your heater and/or complete failure of individual components.

Zodiac Pool Systems, Inc. does not warrant heat exchangers damaged by corrosive water issues or from the build-up of calcium in the heater's heat exchanger. Any questions regarding proper water balance can be

directed to our product support line at Zodiac or to your local pool dealer.

8.2 Seasonal Care

CAUTION

Do not operate this heater outdoors at temperatures below 20 degrees Fahrenheit (°F) (-7 degrees Celsius [°C]).

ATTENTION

Ne faites pas fonctionner cet appareil à l'extérieur à des températures inférieures à 20 degrés Fahrenheit (°F) (-7 degrés Celsius [°C]).

8.2.1 Spring and Fall Operation

During periods when the pool is only going to be used occasionally, set the pool and spa control temperatures to 70°F (21°C) on the Legacy, see Section 7.3.2. This prevents the pool water from becoming chilled, and minimizes the time required to raise the pool water back up to the desired temperature.

If the heater is not going to be used for a long period of time, shut it down completely. Follow the instructions found on the inside of the heater, or refer to Figure 21 of this manual.

8.2.2 Winterizing

In areas where freezing temperatures occur in winter and the pool or spa will not be used, have your service technician perform the following steps:

1. Turn off the main gas valve to the heater, outside the heater jacket.
2. Remove heater door.
3. Shut down the heater following the shutdown instructions found on the inside of the heater or refer to Figure 21.
4. Remove the drain plugs from the inlet/outlet header, and completely drain the heater before the first frost. See Figure 24.
5. After all water has drained from the heater, check for mineral buildup in the openings.
6. Use compressed air to blow out any standing water remaining in the heat exchanger.
7. Inspect the gaskets on the drain plugs and reinstall plugs, but do not tighten.
8. Disconnect the pressure switch from the copper tubing. See Figure 25.

8.2.3 Spring Start-up

To restart the heater in the spring, have a qualified professional technician reassemble the heater as follows:

1. Attach the copper tubing to the pressure switch. See Figure 25.
2. Tighten the drain plug.
3. Make sure that power is supplied to the pump. Turn on the filter pump and circulate water through the heater for 5 minutes. Check for leaks while circulating.

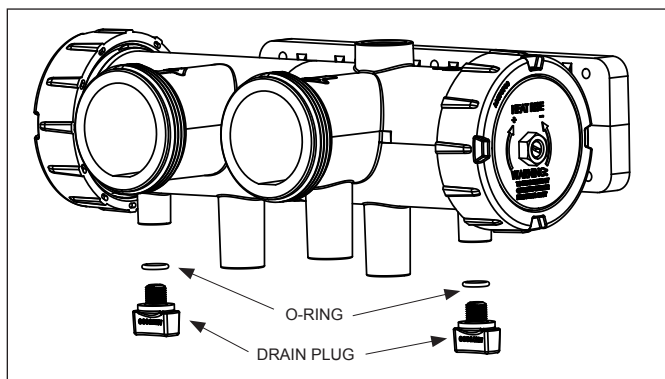


Figure 24. Draining the Heater

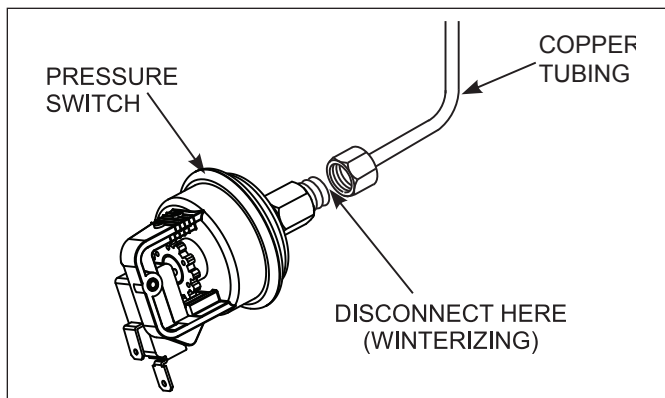


Figure 25. Pressure Switch Copper Tubing

4. Turn on the main gas supply to the heater at the gas cock outside the heater jacket.
5. Turn on the heater following the lighting instructions found on the inside of the heater, or refer to Figure 21 of this manual.

8.3 Inspection and Service

Zodiac Pool Systems, Inc. designs and constructs the heater to provide long performance life when installed and operated properly under normal conditions. Periodic inspections, especially at spring start-up, are important to keep your heater running safely and efficiently through the years. Improper maintenance can result in conditions where nausea or asphyxiation from carbon monoxide or flue gases could cause severe injury, property damage or death.

⚠ WARNING

Improper installation or maintenance can cause nausea or asphyxiation from carbon monoxide in flue gases which could result in severe injury, or death.

⚠ AVERTISSEMENT

Une installation ou un entretien inadéquat peut causer la nausée ou l'asphyxie en raison du monoxyde de carbone présent dans les gaz de combustion et même entraîner des blessures graves ou la mort.

8.3.1 Owner Inspection

Zodiac Pool Systems, Inc. recommends that you inspect the heater on a continual basis and especially after abnormal weather conditions. The following basic guidelines are suggested for your inspection:

1. Keep the top and surrounding area of the heater clear of all debris.
2. Keep the area around and beneath the heater clean and free of all combustible materials such as paper, leaves, etc.

⚠ CAUTION

Do not store or use gasoline or other flammable vapors, liquids or chemicals in the vicinity of this or any other appliance.

⚠ ATTENTION

Ne pas entreposer ni utiliser d'essence ni d'autres vapeurs ou liquides inflammables à proximité de cet appareil ou de tout autre appareil.

⚠ WARNING

Do not use this heater if any part has been under water. Immediately call a qualified service technician to inspect the heater and replace any part of the control system and any gas control which has been under water.

⚠ AVERTISSEMENT

N'utilisez pas cet appareil s'il a été plongé dans l'eau, même partiellement. Faites inspecter l'appareil par un technicien qualifié et remplacez toute partie du système de contrôle et toute commande qui ont été plongés dans l'eau.

3. If the heater is equipped with a pressure relief valve, check for corrosion in and around the valve. Twice a year, with the filter pump on, lift the release lever on the top of the valve to make sure that water runs freely through it. If corrosion is found, replace the pressure relief valve. When replacing the valve, be sure that the pump is off. Install the valve so that the discharge is directed away from any area that may be damaged by water.
4. Be sure all combustion air and ventilation openings are not blocked. Check for spider webs and other debris inside the heater, in the vents on all sides of the heater jacket and in the exhaust outlet—especially after a long period of nonuse.

8.3.2 Professional Inspection

Inspections performed at least once a year by a qualified technician are required to maintain your heater's safe and efficient operation. The following basic safety checks must be performed.

1. Inspect the venting system for blockage, leakage, and corrosion.
2. Check for spider webs or other obstructions in the main burner orifices – especially at spring start-up. Clean with wire brush if necessary.
3. Check for loose or broken wires and terminal connections.
4. Inspect the electrical controls, specifically the following:
 - a. High limit controls.
 - b. Water pressure switch.
 - c. Power interface/Temperature control.
 - d. Ignition control.
 - e. Automatic gas valve.
 - f. Roll-out switch (fusible link).
 - g. Control circuit fuse.
 - h. Vent temperature limit.
5. Inspect the external surfaces of the heat exchanger tubes for black carbon soot buildup by placing a mirror between and under the burners when the heater is firing. Remove any soot that has collected

on the tubes, and correct the cause.

NOTE After installation and first start-up, check the heat exchanger for black carbon soot buildup after the following periods of operation: 24 hours, 7 days, 30 days, 90 days, and once every 6 months thereafter.

6. Make sure that the pressure switch operates properly by shutting the filter pump off and on a few times. The burner should go off immediately after the pump stops. An ignition sequence should start shortly after the pump is turned back on.
7. Conduct a normal operating cycle and observe that the sequence proceeds as intended.

⚠ WARNING

For your safety, when starting the heater, keep your head and face away from the burner area opening to prevent any risk of personal injury.

⚠ AVERTISSEMENT

Pour votre sécurité personnelle, lorsque vous mettez l'appareil en marche, tenez votre tête et votre visage loin du brûleur pour éviter tout risque de blessure.

8. Make a visual check of the main burner flame. The flame can be seen in a mirror arrangement held beneath the burners. The flame should be:
 - a. Blue in color.
 - b. 1 to 4 inches (25mm to 102mm) above burner surface. See Figure 26.
9. Perform a temperature rise test in accordance with Section 7.8.

Section 9. Troubleshooting

9.1 General Heater Troubleshooting

Table 8 lists some of the more common problems, causes and solutions encountered when running the heater. Most problems occur when the heater is being started for the first time after installation or at spring start-up. Careful installation and maintenance will help ensure years of trouble free use from your Legacy heater.

9.2 Service Codes

The Legacy Model LRZ electronic controller monitors several functions of the heater. In the event of a malfunction, the Legacy controller will display a FAULT message. Table 9 lists the Legacy Model LRZ electronic Heater Service Codes along with potential causes and remedies.

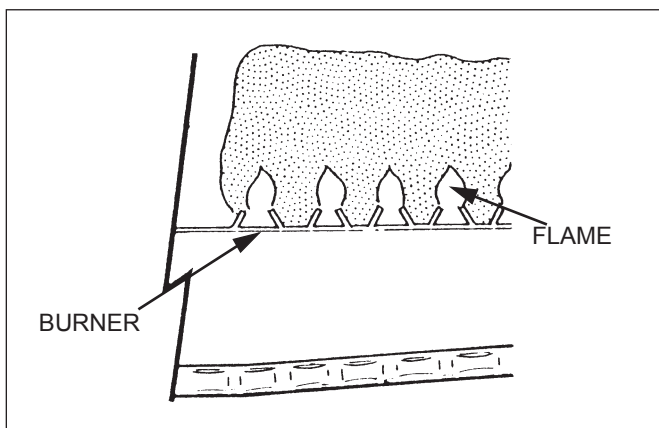


Figure 26. Main Burner Flame

Table 8. Legacy Model LRZ electronic Troubleshooting Guide

#	Symptom	Cause	Remedy
1.	Pump not operating	A. No power B. Pump defective C. Incorrectly wired D. Pump relay defective E. Time clock settings not synchronized with actual time F. Controller defective	A. Check circuit breakers and power source. B. Replace.* C. Recheck wiring.* D. Replace pump relay.* E. Check time clock setting and current time. F. Replaced controller.*
2.	Flame roll-out on start-up	A. Blocked flue on start-up B. Igniter out of position (delayed ignition) C. Blocked heat exchanger D. Refractory tile out of place E. Altered draft hood F. Downdraft conditions G. Low gas pressure.	A. Remove blockage.* B. Correct igniter position.* C. Clean and correct as necessary.* D. Correct or replace tile as necessary.* E. Install factory-provided draft hood.* F. Install vent cap.* G. Adjust burner or supply pressure.*
3.	Spillage at draft hood	A. Cold chimney B. Vent pipe pitches down to chimney C. Blocked chimney D. Draft hood altered E. Prefabricated chimney with incorrect cap	A. Allow heater to operate 5 minutes to create draft action.* B. Reinstall vent pipe to pitch up from heater to chimney. C. Remove blockage.* D. Install factory-provided draft hood.* E. Install a Nationally Recognized Testing Lab (NRTL) listed vent cap.*
4.	Flame has lazy yellow tip	A. Low primary air / low gas pressure	A. Correct manifold pressure according to rating plate. Correct lazy yellow tip orifice size if necessary (see parts list). Clean burner ports if dirty.*
5.	Not enough heat	A. Inadequate gas supply B. Low manifold gas pressure C. Heater size inadequate D. Temperature rise set incorrectly	A. Gas meter too small. Gas line from meter to heater too small.* B. Gas pressure on heater manifold, should be adjusted to 4.0" W.C. (Natural), 9.0" W.C. (Propane).* C. Replace with heater of higher input.* D. Adjust temperature rise according to Section 7.8 of this manual. *
6.	Heater pounding or knocking	A. Inadequate water flow through heater	A. Check temperature rise between inlet and outlet heater piping. See Section 7.8 for recommended range of temperature rise. If temperature rise is above the maximum recommended, adjust the bypass. Check for closed valve in system.*
7.	Heater condensing	A. Low water temperature B. Heater plumbed backwards C. Excessive water flow	A. Flue product moisture will condense at the start-up until the heater water temperature reaches the normal operating conditions.* B. Correct Plumbing.* C. Perform a temperature rise test according to Section 7.8. Adjust as necessary.*
8.	Igniter lights but main burners will not come on	A. Gas valve not at "on" position B. Air in gas line C. Gas valve failed	A. Turn knob to "on" position. B. Cycle ignition sequence until air is out of the gas line.* C. Replace gas valve.*

* Must be performed by a qualified professional pool technician.

Table 9. Legacy Model LRZ Electronic Heater Service Diagnostic Guide

Display Fault	Cause	Remedy
<i>Display shows</i> NO FLOW	<ol style="list-style-type: none"> 1. Pump is not running. 2. Low pump pressure. 3. Pressure switch fault. 	<ol style="list-style-type: none"> 1. This is a normal display when the pump is OFF. No Service Required. 2. Clean filter or clear blockage, check position of valve in plumbing system. 3. Adjust or replace pressure switch. Refer to qualified service personnel.
FAULT-HIGH LIMIT	<ol style="list-style-type: none"> 1. Water temperature in heater exceeds the internal limit. 2. Limit switch fault. 	<ol style="list-style-type: none"> 1. Verify function of high limit switches. Perform temperature rise test. Identify and correct cause of overheating. Refer to qualified service personnel. 2. Identify and correct loose connections or replace switches. Refer to qualified service personnel.
FAULT-FUSELINK/FIELD	<ol style="list-style-type: none"> 1. Roll-out switch (fusible link) fault. 2. Vent temperature limit fault. 	<ol style="list-style-type: none"> 1. Identify and correct loose connections or replace roll-out switch (fusible link). Check for and correct any downdraft condition. Refer to qualified service personnel. 2. Identify and correct loose connections or replace vent temperature limit. Refer to qualified service personnel.
FAULT-CHECK IGN CONTROL	<ol style="list-style-type: none"> 1. Air flow restricted at intake or discharge. 2. Oscillating pump pressure. 3. Low gas supply pressure. 4. No flame at burners. 	<ol style="list-style-type: none"> 1. Check for proper clearances around heater and for adequate room ventilation if enclosed. Inspect for blockage or restriction at discharge of flue. Refer to qualified service personnel. 2. Clean filter or identify and repair cause of pump oscillation. 3. Identify and repair incorrect supply pipe size or pipe line blockage. 4. Identify and correct loose wiring connections, or problems with igniter, flame sensor, gas valve, or ignition control. Refer to qualified service personnel.
FAULT-SHORTED H2O SENSOR or FAULT-OPEN WATER SENSOR	<ol style="list-style-type: none"> 1. Faulty wiring or connection. 2. Failed sensor. 	<ol style="list-style-type: none"> 1. Inspect sensor wiring. Ensure sensor is connected into Power Interface Board. 2. Replace temperature sensor. Refer to qualified service personnel.

Section 10. Professional Maintenance and Service

⚠ WARNING

SERVICING SAFETY

Some of the servicing procedures for the Legacy Model LRZ electronic heater are hazardous because they involve fuel gas, electricity, moving parts and procedures which require testing or temporary bypass of safety controls. For this reason, the heater must be serviced only by a qualified professional service technician.

IMPROPER SERVICE HAZARD

The Legacy Model LRZ electronic heater incorporates unique design features. Incorrect service of this heater can result in death, personal injury or damage to property. To avoid such hazards, the heater must be serviced only by a qualified professional service technician.

⚠ AVERTISSEMENT

PRÉCAUTIONS LORS DES RÉPARATIONS ET DE L'ENTRETIEN

Certaines procédures d'entretien et de réparation des appareils de chauffage à faibles émissions Legacy et Legacy présentent des dangers, car elles mettent en jeu des gaz combustibles, des composants électriques, des pièces mobiles et des procédures qui nécessitent des mises à l'essai ou la dérivation temporaire des commandes de sécurité. Pour cette raison, l'appareil de chauffage doit être entretenu et réparé uniquement par un technicien professionnel qualifié.

DANGERS D'UN ENTRETIEN INADÉQUAT

Les appareils de chauffage à faibles émissions comportent des caractéristiques techniques uniques. Une réparation ou un entretien inadéquat peut résulter en la mort, les blessures corporelles ou les dommages à la propriété. Pour cette raison, l'appareil de chauffage doit être entretenu et réparé uniquement par un technicien professionnel qualifié.

10.1 General Information

A qualified professional technician must service the Legacy Model LRZ electronic pool heater using Zodiac Pool Systems, Inc.'s service procedures. Before calling for service, however, the owner should check for obvious problems. The other components in the pool system, including pump, filters and strainers, water valves, gas supply, electrical power and time clocks, have an affect on heater operation.

Confirm that the heater control is set to either **POOL** or **SPA** and that the corresponding temperature set point is set high enough to make the heater operate. Make sure the pump is operating, that the filter and strainers are not clogged, that there are no mispositioned water valves, that the gas or electric power supplies are not shut off and that time clocks are properly adjusted. Also be sure that there is no blockage of the exhaust vent grill or rear louvers, which supply combustion air to the burners.

10.2 Natural-Draft Combustion System

The Legacy Model LRZ electronic pool and spa heater has an atmospheric combustion system. This system is illustrated in Figure 27.

As the heated exhaust gases rise out of the combustion chamber, flow is created through the system and fresh combustion air is drawn into the heater through the louvers cut into the front and sides of the heater. Gas is forced through an orifice into the open end of a burner. When the gas flows into the burner, a "negative" pressure is created at the opening of the burner. This negative pressure pulls air into the burner with the gas and mixes the two together. As the gas/air mixture flows through the burner ports it is ignited in the combustion chamber. Hot combustion products then rise through a highly efficient heat exchanger. Combustion products then enter a flue collector and are directed to the outdoors through the top of the heater or a vent pipe and cap.

10.3 Heater Components and Their Operation

1. **Gas Valve / Regulator** - The gas valve controls gas flow into the manifold. It provides flow only when the temperature control requires heat and only if all safety controls enable operation. It is also a positive pressure regulator. It regulates the gas pressure in the manifold to specifications addressed earlier in this manual. This is necessary for proper operation of the burner system.

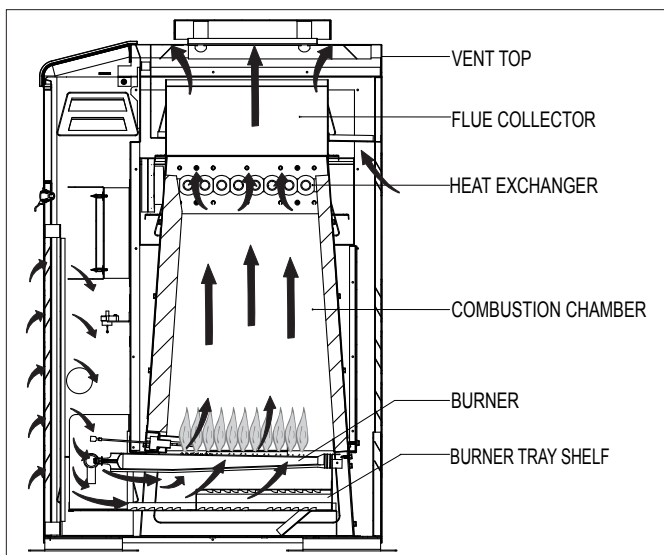


Figure 27. Atmospheric Combustion System

2. **Temperature Control** - The Legacy Models are equipped with an electronic control which senses water temperature by means of a thermistor and controls heater operation to bring the water to the temperature selected. It has an option for two separate thermostat settings which are typically used to set pool and spa temperatures.
3. **Ignition Control** - The ignition control provides energy for ignition of the air/gas mixture, monitors the flame and controls the gas valve. Then it applies electrical power to a "hot surface" igniter. When the igniter is hot enough, the ignition control opens the gas valve. It is designed to monitor and control the igniter once it confirms the existence of proper ignition of the gas. It is also designed to provide an appropriate post-purge period to ensure proper removal of any unburned gas after the burner is shut off.
4. **Igniter** - The hot surface igniter is a crystalline element which becomes very hot when electrical power is applied to it. The hot surface igniter directly ignites the air/gas mixture in the combustion chamber. LRZE heaters from Revision J forward use a spiral igniter (see Figure 28). Previous versions use a flat surface igniter (see Figure 29).

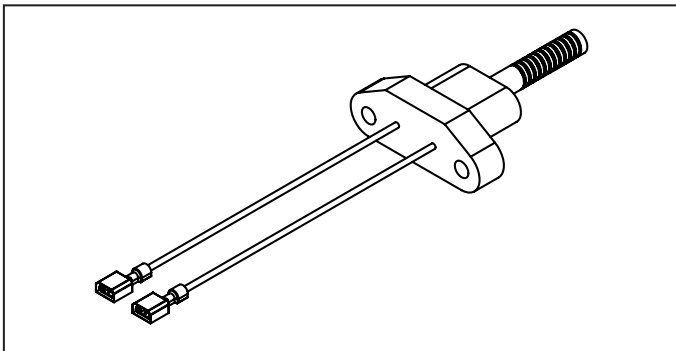


Figure 28. Spiral Igniter

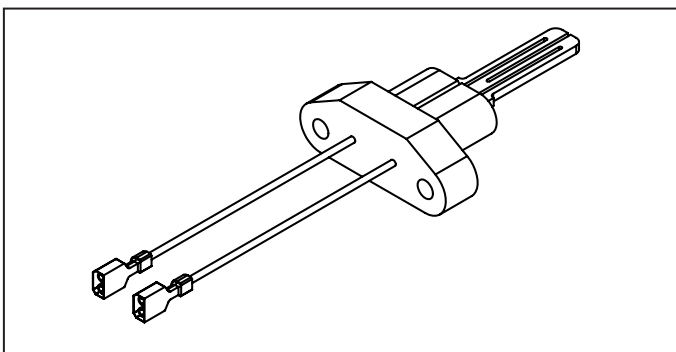


Figure 29. Flat Surface Igniter

5. **Flame Sensor** - The flame sensor is the electrode through which the ignition control detects "rectification" of current passed through the flame. Inadequate rectification indicates an unsatisfactory flame condition. The rectification signal can be measured by attaching the leads of a DC ammeter to the two (2) pins on the connector of the ignition control

labeled "FC". A wire harness, available from Zodiac Pool Systems, Inc., makes it easier to attach the voltmeter leads. The flame current should not be less than 1.5 micro-amps. If the flame signal is less than 1.5 micro-amps, verify correct gas supply and manifold pressures.

6. **Limit Switches** - Two limit switches prevent excessive water temperature - one at the heat exchanger outlet and one for water leaving the heater. If either senses excessive temperature, burner operation is interrupted.
7. **Water Pressure Switch** - This control senses whether or not water is available to the heater by measuring back pressure inside of the heat exchanger. If the pool water pump fails or the water filter is blocked, the pressure switch prevents operation of the burner.
8. **Roll-Out Switch (Fusible Link)** - This is a single-use switch which detects abnormal temperature in the component compartment of the heater. It is a roll-out switch (fusible link) which is held to the combustion chamber just above the burner tray by a sheet metal bracket. Excessive temperature in the component compartment, possibly due to a blocked flue or flame roll-out, will cause the switch to fail. This opens the safety circuit which shuts off the gas valve and shuts the heater down.
9. **Vent Temperature Limit** - This is a single-use switch which detects abnormal temperature in the vent system. It is mounted to the flue collector assembly. Excessive temperatures will cause the switch to open. Excessive temperatures can be caused by inadequate water flow or a damaged heat exchanger. The vent temperature limit will open the safety circuit which shuts off the gas valve and shuts down the heater.

10.4 Electrical Troubleshooting

This section describes procedures for checking the electrical power and control components of the heater one at a time and in the order they appear in the control circuit. It is important to follow the sequence of this troubleshooting guide because the safety circuit is connected in series.

NOTE Pump must be running during the troubleshooting procedure.

These procedures require a Volt-Ohm meter with a minimum 0-250VAC voltage range, and 1-1000 Ohm resistance range. Figure 30 shows the power and control circuits and where to take measurements. Location numbers in circles have been added, and will be referenced in the following sections.

Where test points are shown at circuit board connectors, the probe of the meter can be carefully pushed into the connector along side of the wire at the connection to be measured.

The electrical power supply can be checked with the heater not set to fire. All other procedures need to be checked with power correctly supplied to the heater, all external devices set so that the heater is allowed to fire and the heater's thermostat set so that there is a call for heat.

As stated at the beginning of the manual, some of these procedures are hazardous. Only a qualified service technician should service the heater.

10.4.1 Electrical Power Supply

The electrical components of the Legacy Model LRZ electronic pool heaters are designed to operate with supply voltage ranging from 102V to 132V at 60 Hz if connected to a nominal 120 Volt power supply, or 204V to 264V at 60 Hz if connected to a nominal 240 Volt power supply. Measure supply voltage at the power supply leads where they enter the heater to verify that the correct voltage is supplied to the heater.

If no voltage is present, correct this external power supply problem to the heater. Circuit breakers, time clock settings or similar devices may be the problem. Voltage outside of the above ranges may be due to poor wiring, poor connections, other loads such as air conditioning compressors or to an electric utility company problem. Arrange for correction of the voltage as appropriate.

10.4.2 Controller

The controller must be operational in order to check the control circuits of the heater.

10.4.3 Control Circuit Troubleshooting

The heater controls are arranged in several 24V 60Hz circuits with some operating and safety controls arranged in series circuits.

Troubleshooting is done by probing for voltage between the common and various points in the circuit to determine which component is preventing operation. Check points are indicated on Figure 30. The black lead of the meter should be attached to the common tap on the secondary side of the transformer and may be left there throughout most of the procedure.

The recommended procedure steps through each circuit in a sequential way, and each section assumes that components from all previous sections have been tested and are operational. However, verifying voltage at any of the numbered points in that circuit confirms that all prior components of the circuit are operational.

10.4.3.1 Transformer

Attach the black lead of the voltmeter to the terminal on the secondary side of the transformer of the transformer with a yellow wire attached to it (common). This is test point 1 on Figure 30. Touch the free red lead of the voltmeter to the terminal on the secondary side of

the transformer with a red wire attached to it (24V tap), test point 2. The voltmeter should read between 20-28 Volts AC. If the voltage does not fall within the limits mentioned above, replace the transformer.

10.4.3.2 Fuse

Leave the black voltmeter lead in place at test point 1. Touch the free lead of the voltmeter to test point 3, which is on the Power Interface Board where the red wire from the transformer enters the end of the connector. You will need to push the voltmeter lead into the back of the connector along side of the wire pin. The meter should read 20-28 Volts AC. If there is no voltage, the fuse has failed. Inspect the rest of the wiring, especially the safety circuit, to be sure that there is no "short" such as contact of a terminal with the heater chassis or another terminal which may have caused the fuse to fail. Correct any such condition and replace the fuse. Use only a 2 amp, 1 1/4" long x 1/4" diameter, quick acting, glass tube type fuse.

10.4.3.3 Water Pressure Switch

Start by checking the voltage at the two legs of this circuit on the controller, see test points 4 and 5 in Figure 30. Check the voltage at test point 4, where the violet wire from the pressure switch enters the two-pin connector on the controller. If there is not 20-28 Volts AC nominal at this point, either the controller or the two-pin wire harness is faulty and must be replaced. If 20-28 Volts AC nominal is detected at test point 4, then move the red lead of the meter to test point 5 where the gray wire from the Pressure Switch enters the two-pin connector. If 20-28 Volts AC nominal is detected at this point, the devices in this circuit are closed and the circuit is working properly.

If there is no voltage the pressure switch contacts are open. This is almost always due to a water flow deficiency, the most common one being a blocked water filter or defective pump. However, sometimes it is due to blockage of the copper siphon loop tube or mis-adjustment of the switch. Investigate thoroughly, referring to Section 7.7 on "Adjusting the Water Pressure Switch". If there is no problem with the pool system or pressure switch adjustment, replace the pressure switch.

10.4.3.4 Roll-Out Switch (Fusible Link)

To check the roll-out switch (fusible link)/air louver/field interlock circuit, place the red lead at test point 6. If there is not 20-28 Volts AC nominal, either the controller or the two-pin wire harness is faulty, or the water pressure switch is open. If 20-28 Volts AC nominal is detected at test point 6, then move the red lead of the meter to test point 7. If 28 Volts AC nominal is detected, the circuit is closed and working correctly. If the proper voltage is not detected, the roll-out switch (fusible link) or vent temperature limit has opened, or the wire harness is faulty.

If no voltage is detected at test point 7, the roll-out switch (fusible link) or vent temperature limit has failed. This indicates higher than normal temperatures in the component compartment (vestibule). The normal component compartment temperature is well below 300°F (149°C). The roll-out switch (fusible link) is designed to fail at temperatures above 305°F (152°C). Excessive temperature might be due to a blocked flue or heat exchanger. Clean the heat exchanger and clear the flue and vent of any restrictions. Sometimes the roll-out switch (fusible link) fails due to flame roll-out. Flame roll-out may be caused by delayed ignition or downdrafting in windy areas. Thoroughly investigate the causes for flame roll-out and correct the problem when replacing the roll-out switch (fusible link). The vent temperature limit will fail due to abnormal temperatures in the vent system. Excessive temperatures will cause the switch to open. The vent temperature limit is designed to fail at temperatures above 464°F (240°C). Excessive temperatures can be caused by inadequate water flow or a damaged heat exchanger. Thoroughly investigate the causes for roll-out switch (fusible link) failure and correct the problem when replacing the vent temperature limit.

10.4.3.5 Temperature Limit Switches Circuit

Since the limit switches are not easily accessible, the voltage can be checked at the two legs of the circuit at the controller. See test points 8 and 9 in Figure 30.

Check the voltage at test point 8. If there is not 20-28 Volts AC nominal at this point, either the controller or the two-pin wire harness is faulty, or one of the two safeties (water pressure and fuselink) before it are open. If 20-28 Volts AC nominal is detected at this point, then move the red lead of the meter to test point 9 where the black wire from the 130°F (55°C) limit enters the two-pin connector. If 20-28 Volts AC nominal is detected at this point, the devices in this circuit are closed and the circuit is working properly.

If there is no voltage, one of the limit switches is open. This is normally due to excessive water temperature, which should be thoroughly investigated before replacement of limit switches. Excessive water temperature may be caused by low water flow. Water flow deficiency may be due to obvious problems such as a defective pump or blocked water filter. Alternatively, excessive water temperature may be due to over-firing, or to a problem with the water piping or the heater's internal bypass control. Over-firing might be a result of an incorrect gas orifice or supply of propane gas to a heater intended for natural gas.

If there are no such fundamental problems, identify which of the switches is open. Limit switch access is through the limit switch plugs on the side of the heater to which water pipes are connected. Remove the limit switch plugs from the bottom of the header and gently remove the switches from the wells.

Note that the limit switches have different trip

points, and it is important that replacements are correct. The 150°F (65°C) switch has a red dot on the top of the switch, and is closest to the heater jacket, must be installed in the lower well in the header. The 130°F (55°C) switch has no dot, and is farthest from the heater jacket. must be installed in the upper well in the outlet of the header.

Move the red meter lead to the terminal connection on the 150°F (65°C) switch that is connected back to the controller. The voltmeter should read 20-28 Volts AC nominal. No voltage here means that the two-pin wire harness is bad and should be replaced. If voltage is detected at this point move the lead to the other terminal of the switch. If the voltmeter does not show voltage then the 150°F (65°C) limit is bad and should be replaced. If the meter reads 20-28 Volts AC nominal, move the lead to the terminal of the 130°F (55°C) limit that is connected to the wire that jumps between the two limit switches.

No voltage here means that the wire assembly is bad and needs to be replaced. 20-28 Volts AC nominal shows that the wire between the two limits is making a good connection. Now move the lead to the other connection terminal on the 130°F (55°C) limit. No voltage at this point indicates that the limit switch has failed and needs to be replaced. Voltage here would show that the limit is good and that the two-pin wire harness may have a bad connection. Replace the wire harness, if necessary.

10.4.3.6 Gas Valve Voltage

The gas valve will operate only when there is a call for heat, all safety circuits have been satisfied and the hot surface igniter has had power for approximately 35 seconds. If the gas valve does not operate under these conditions, check the voltage going to the gas valve. Place one voltmeter lead on the connector on the ignition control where the yellow wire is connected (test point 16). Touch the free lead of the meter to the gas valve terminal where the brown wire is attached at the gas valve. This test point will have voltage present only during a trial for ignition or during normal operation. The meter should read 20-28 Volts AC. If there is no voltage, then there is a bad connection between the gas valve and the ignition control. Replace the wire harness.

Listen closely to the gas valve when it is first energized (24V first appears at test point 15 during the trial for ignition). There should be an audible "click" when the valve opens.

If there is voltage at the gas valve terminal where the brown wire is attached, but the gas valve does not open, replace the valve.

10.4.3.7 Igniter/Ignition Control Circuit

WARNING

The igniter, power supply circuit board and some terminals of the ignition control utilize 120V or 240V power and require appropriate servicing precautions. Note that wires and terminals of these components may be “hot” even when the component is not operating.

AVERTISSEMENT

Le dispositif d'allumage, le circuit d'alimentation électrique et certaines bornes de la commande d'allumage utilisent une tension de 120 V ou de 240 V et exigent des précautions appropriées lors du service d'entretien et de réparation. Notez que les fils et les bornes de ces composants peuvent être chauds même si le composant ne fonctionne pas.

With the igniter energized, there will be voltage of 102-132 VAC supplied by the ignition control, test point 13 and test point 10, if the heater is connected to a 120V supply. If the heater is connected to a 240V supply, there will be voltage of 102-132 VAC supplied by the ignition control, test point 12 and test point 10, with the igniter energized. This voltage will be applied only during igniter heat up or trial for ignition. Even if voltage has been confirmed at the end of the safety circuit, the “trial for ignition” sequence is imposed by the ignition control. This sequence consists of a 15 second period of pre-purge, a 40 second period for heat-up of the igniter and a seven (7) second trial for ignition. During this last 47 seconds there is voltage between test point 13 and test point 10, or between test point 12 and test point 10. If satisfactory ignition is not achieved, the igniter is turned off and the system waits for a 15 second inter-purge period. The system may go through this cycle as many as three (3) times, but thereafter it is “locked out” by the ignition control for a one hour period. Additional attempts will be made only if the call for heat is interrupted by turning off electrical power or setting the control to “Off” and then back to “Pool” or “Spa” or after the one hour delay.

To trouble shoot the ignition control's igniter, observe that the normal ignition sequence takes place. After the 15 second pre-purge, note the voltage between test points 13 and 10, or test points 12 and 10. Then look for the glow of the igniter through the view port on the right side of the combustion chamber. If the correct voltage is detected between points 13 and 10, or points 12 and 10 during the trial for ignition but the igniter does not glow, check the connections to the igniter.

Check the igniter with the ohmmeter. Disconnect the IGN120 or IGN240 terminals from the ignition control and the connector at test point 10. Place one lead

of the meter on each wire to the igniter. The resistance should read between 40 and 75 Ohms at ambient air temperature. If the meter reads outside of this range or shows an open or short circuit, replace the igniter. If a short circuit is indicated, it is necessary to investigate further to find if the short is from the igniter or the flame sense circuit.

If voltage does not appear between points 13 and 10, or points 12 and 10 during the trial for ignition, there may be a bad connection, faulty transformer, or a short on the ignition control. Check all connections, the transformer, and the ignition control for loose or corroded connections or failure and replace as necessary.

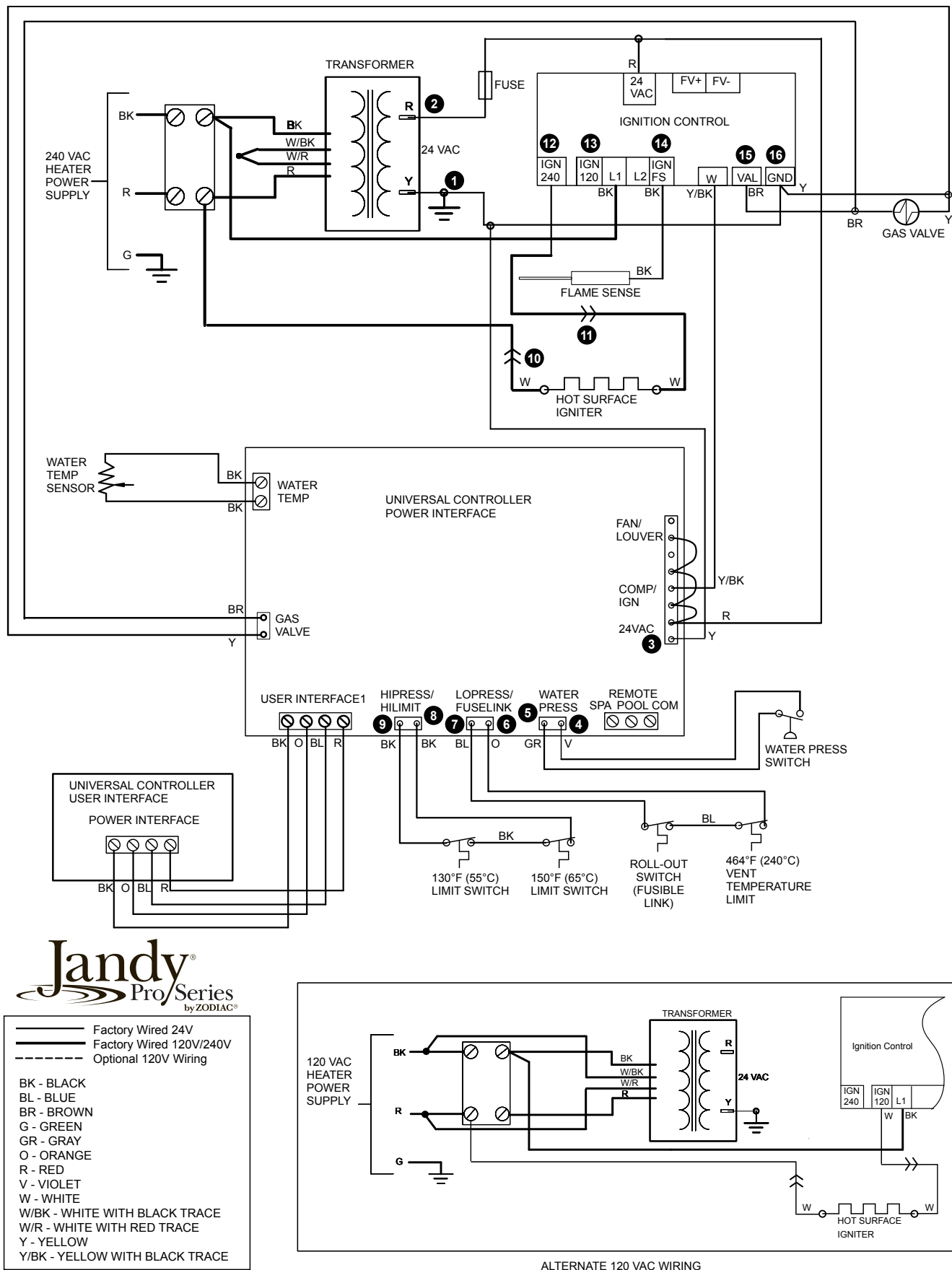


Figure 30. Test Point Identification Diagram

Section 11. Replacement Parts

11.1 Ordering Information

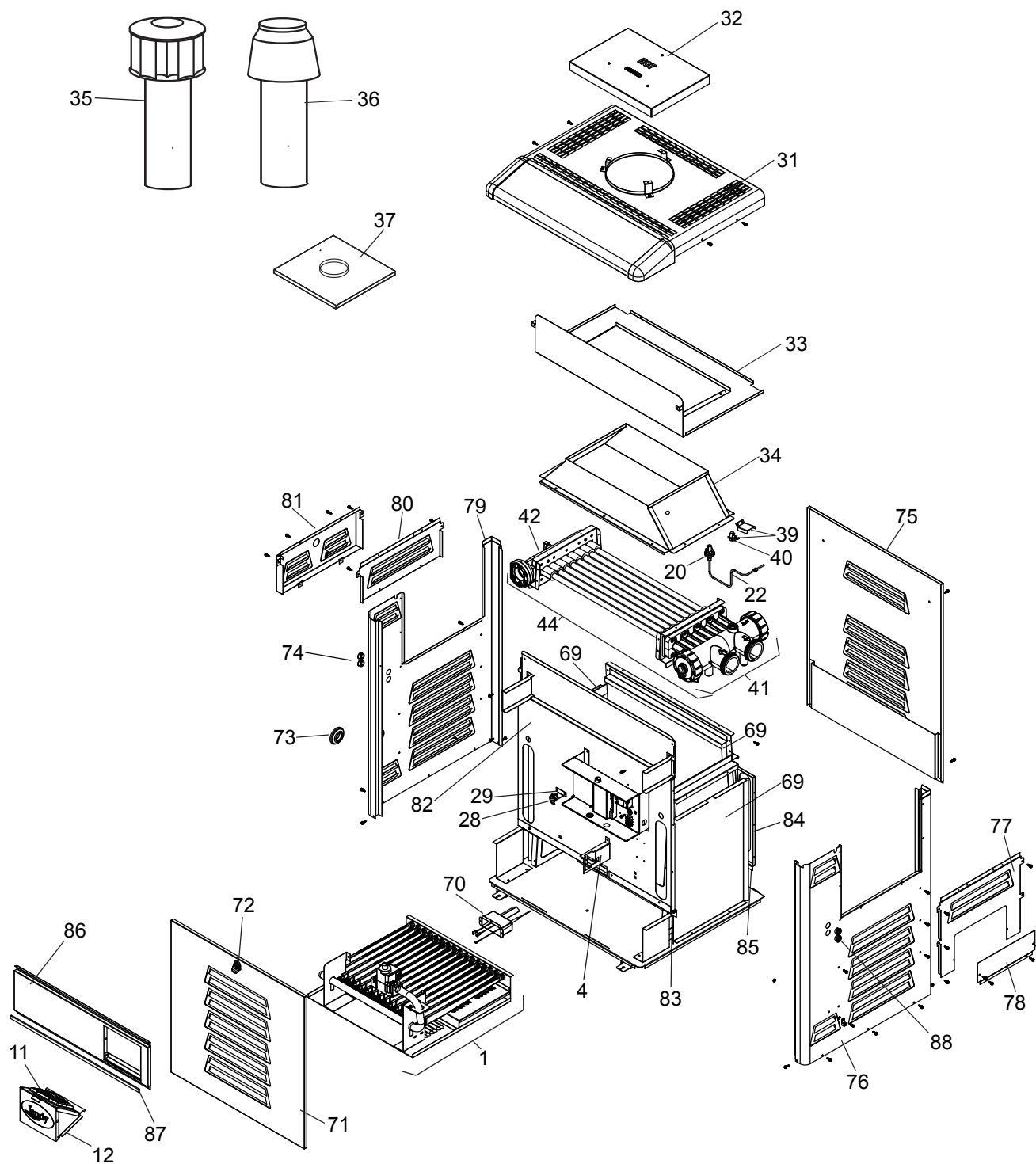
To order or purchase parts for the Legacy Model LRZ electronic pool and spa heater, contact your nearest Jandy dealer or distributor. See the Jandy web site at www.jandy.com for the nearest service center. If they cannot supply you with what you need, contact Technical Support Department at (800) 822-7933.

NOTE To supply the correct part it is important that you state the model number, serial number and type of gas when applicable. This information is on the rating plate inside the heater.

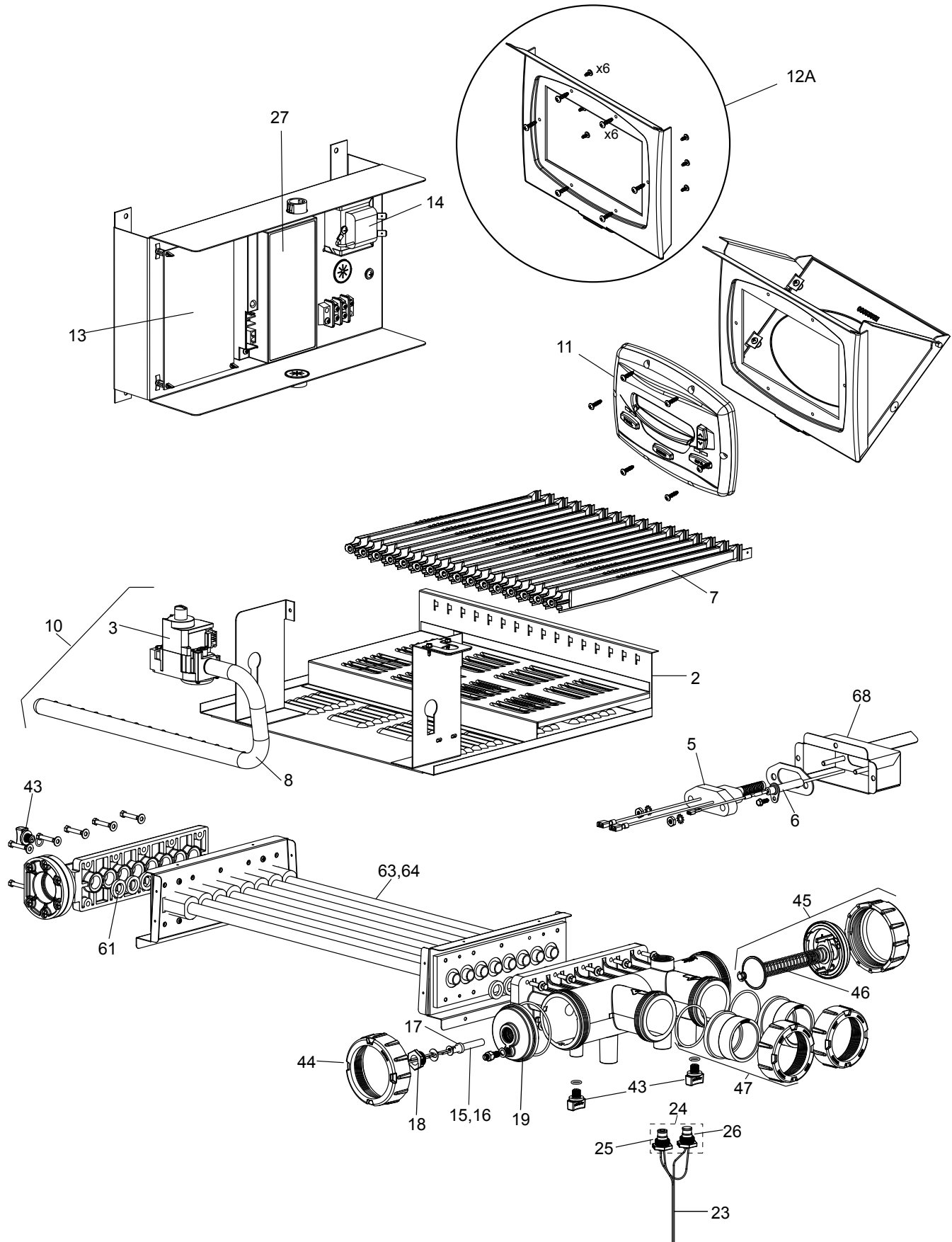
11.2 Parts List

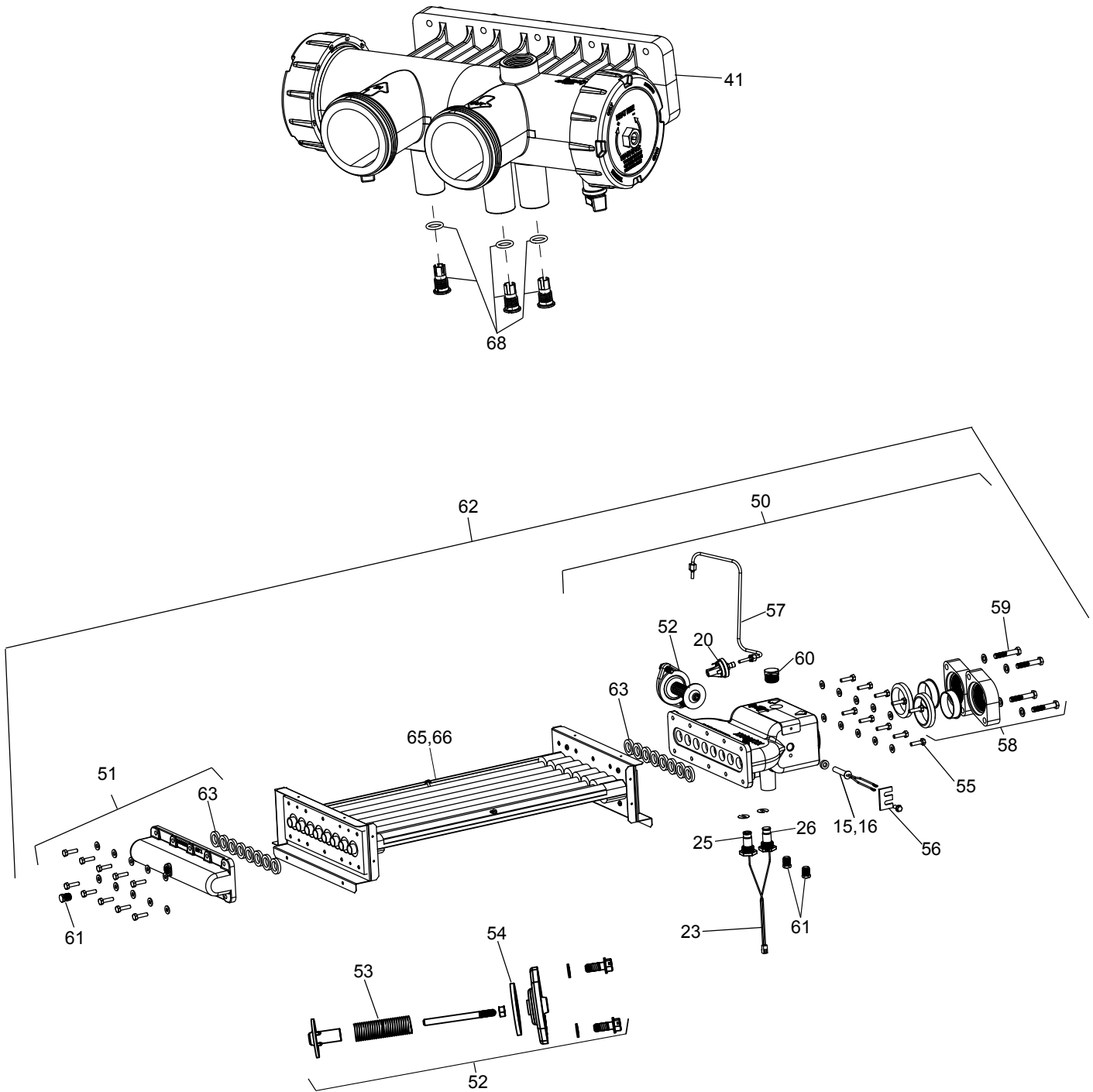
Key No.	Description	Model No.	Order Part No.	Key No.	Description	Model No.	Order Part No.
Main Gas Assembly				Water System-Polymer (Continued)			
1	Burner Tray Assy, Natural	125-400	R0468901-05	45	Heat Exchanger Drain Plugs (2), Polymer	All	R0446000
1	Burner Tray Assy, LP	125-400	R0469001-05	46	3" Coupling Nut Kit w/ O-ring	All	R0454000
2	Burner Tray, Shelf Only	125-400	R0469101-05	47	Bypass Assembly, Polymer	125-400	R0453701
3	Gas Valve, NAT	All	R0494500	48	Bypass Spring, Adjustable, Polymer	All	R0453901
3	Gas Valve, LPG	All	R0494600	49	Tailpiece w/ Union Nut (Set of 2), Polymer	All	R0449000
4	Anti-Rotation Bracket	All	R0469700	Water System-Bronze			
5	Hot Surface Igniter	All	R0457501	50	Inlet/Outlet Header Assy, Bronze, 2"	125-400	R0476601-05
6	Flame Sensor Rod	All	R0458601	51	Return Header Assy, Bronze (includes set of 9 gaskets)	All	R0476700
7	Burner, Main	All	R0469800	52	Bypass Assembly, Bronze	125-400	R0476801-05
8	Burner Manifold	125-400	R0469901-05	53	Bypass Spring, Bronze	125-400	R0476901-05
9*	Orifice Set, Natural Gas, 0-3K ft.	All	R0469200	54	Bypass Gasket, Bronze	All	R0011400
9*	Orifice Set, Natural Gas, 3-6K ft.	All	R0469300	55	Heat Exchange Hardware Kit, Bronze	All	R0477200
9*	Orifice Set, Natural Gas, 6-10K ft. (US only)	All	R0469400	56	Temp Sensor Mounting Bracket, Bronze	All	R0477400
9*	Orifice Set, L.P. Gas, 0-5K ft.	All	R0469500	57	Water Pressure Switch Tubing, Bronze	All	R0477501
9*	Orifice Set, L.P. Gas, 5-10K ft. (US only)	All	R0469600	58	Flange & Gasket Kit, Bronze	All	R0461500
10	Manifold Assy, Natural Gas,	All	R0495601-05	59	Flange Bolts, Bronze	All	R0477800
10	Manifold Assy, Natural Gas, 3-6K ft.	All	R0495701-05	60	3/4 NPT Plug, Bronze	All	R0477900
10	Manifold Assy, Natural Gas, 6-10K ft. (US only)	All	R0495801-05	61	Header, Drain Plug, Bronze	All	R0478000
10	Manifold Assy, L.P. Gas, 0-5K ft.	All	R0495901-05	62	Heat Exchanger Assy, Complete, Copper	All	R0470701-05
10	Manifold Assy, L.P. Gas, 5-10K ft. (US only)	All	R0496001-05	62	Heat Exchanger Assy, Complete, CuNi	All	R0500801-05
Electrical System				Water System-All			
11	Universal Control User Interface	All	R3008800	63	Header Gasket Assembly (Set of 16)	All	R0454300
12	Universal Control w/ Bezel	All	R0496700	64*	Bypass Hardware, Gaskets	All	R0453800
12A	Universal Control Interface Panel Kit	All	R0562900	65	Heat Exchanger Tube Assy, Copper	125-400	R0490101-05
13	Universal Control Power Interface	All	R0470200	66	Heat Exchanger Tube Assy, CuNi	125-400	R0490301-05
14	Transformer	All	R0061100	67*	Baffles, Heat Exchanger	125-250	R0500001-03
15	Temperature Sensor (Regular)	All	R0456500	68	Plug, Sensor	All	R0456800
16	Temperature Sensor (Salt)	All	R0477300	Firebox Components			
17	Gasket, Temperature Sensor	All	R0456600	69	Combustion Chamber Panels	125-400	R0494901-05
18	Nut, Sensor Retainer	All	R0523900	70	Igniter Bracket w/ Shield	125-400	R0484000
19	Cap Sensor/Press Switch w/ O-Ring	All	R0455400	Jacket Components			
20	Pressure Switch, 2 PSI	All	R0013200	71	Door with Latch	125-400	R0470901-05
21*	Pressure Switch, 1-10 PSI	All	R0015500	72	Latch Assembly	All	R0334900
22	Water Pressure Switch Tubing	All	R0483600	73	Grommet, Sealing, 2"	All	R0460300
22*	Water Pressure Switch Tubing, Long	All	R0483601	74	Button Plug, 7/8"	All	R0491100
23	High-Limit Switch Assembly	All	R0457400	75	Rear Panel Assy	125-400	R0482301-05
24	High-Limit Set, 130°F & 150°F (55°C & 65°C)	All	R0457200	76	Side Panel, Right	All	R0482400
25	High-Limit Switch, 130°F (55°C)	All	R0457300	77	In/Out Cover Panel, Top	All	R0482500
26	High-Limit Switch, 150°F (65°C)	All	R0023000	78	In/Out Cover Panel, Bottom	All	R0482600
27	Ignition Control	All	R0491300	79	Side Panel, Left	All	R0482700
28	Roll-Out (Fusible Link) Assembly	All	R0012200	80	Return Side Cover, Top	All	R0482800
29	Roll-Out (Fusible Link) Bracket	All	R0337200	81	Return Side Cover, Bottom	All	R0482900
30*	Wire Harnesses, Set	All	R0470000	82	Heat Shield	125-400	R0483101-05
Vent System				83	Heat Deflector Guard, Front	125-400	R0483201-05
31	Top Enclosure	125-400	R0470301-05	84	Rear Partition	125-400	R0483401-05
32	Vent Cover	125-400	R0470401-05	85	Heat Deflector Guard, Rear	125-400	R0483501-05
33	Rainshield (Partition)	125-400	R0478201-05	86	Controller Mounting Panel	125-400	R0483901-05
34	Flue Collector Assembly	125-400	R0470501-05	87	Weather Stripping	All	R0491000
35	Outdoor Vent Cap (U.S.)	125-400	R0491601-05	88	Grommet, 7/8"	All	R0492800
36	Indoor Draft Hood (U.S.)	125-400	R0499601-05	Optional Components			
37	Adapter Plate	125-400	R0478301-05	89*	Noncombustible Base	125-400	R0471001-05
38*	Clip	All	R0500200	90*	Press Relief Valve Kit, 75 PSI, Bronze	All	R0040400
39	Vent Temp Limit Assembly	All	R0534800	91*	Press Relief Valve Kit, 75 PSI, Polymer	All	R0336100
40	Vent Temp Limit, 464°F (240°C)	All	R0524300	92*	Temp Rise Measurement Kit	All	R0336000
Water System-Polymer				NOTES:			
41	Inlet/Outlet Header Assy, Polymer	125-400	R0470800	1. All hardware sets contain all pieces necessary for assembly, including gaskets.			
42	Return Header Assy, Polymer	All	R0454201	2. Gaskets and hardware are included in all kits that involve the removal of a gasket as part of the procedure to replace a part.			
43*	Header Hardware Set, Polymer	All	R0454500	* PARTS NOT SHOWN ON KEY VIEW			
44	Heat Exchanger Assembly, Complete, Copper	125-400	R0470601-05	** MANIFOLD KIT INCLUDES INSTALLED ORIFICES BUT DOES NOT INCLUDE GAS VALVE			
44	Heat Exchanger Assembly, Complete, CuNi	125-400	R0500701-05				

11.3 General Exploded View



11.4 Detailed Exploded View





NOTES

Zodiac Pool Systems, Inc.
2620 Commerce Way, Vista, CA 92081
1.800.822.7933 | www.ZodiacPoolSystems.com



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